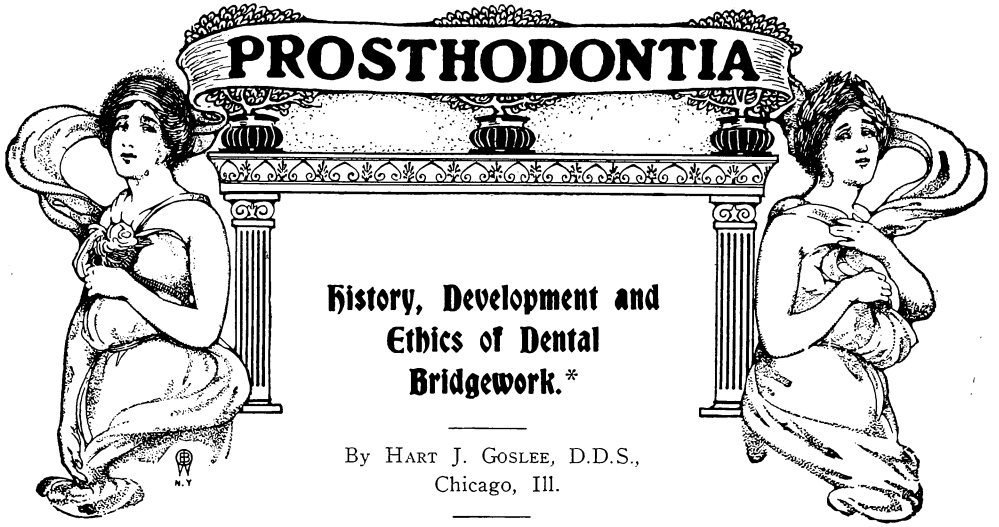

History, Development and Ethics of Dental Bridgework.*

By Hart J. Goslee, D.D.S.,
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The art of dental prosthesis, and particularly in so far as it pertains to supplying missing teeth by attaching artificial substitutes to remaining natural ones—which is now termed *dental bridgework*—was doubtless, and is recorded as being, among the earliest achievements of primitive dentistry.

History.

As an art its origin has been traced to the remote epochs of the Egyptians, Phoenicians, Greeks, Etruscans and Romans, and archeological researches have unearthed specimens which give silent evidence, and prove beyond peradventure, that the possibilities of this art were recognized by the people of these ancient periods; that it was practiced by them to a greater or less extent, and that it antedated all forms of plates and other means of supplying missing teeth.

The specimens, especially of the Etruscans—"those wonderful fashioners of gold"—which are now to be found in archeological museums, bear so striking a resemblance to the efforts, even of the present time, as to cause us to marvel at their skill and ingenuity. Several comparatively excellent pieces of work, wherein missing teeth were substituted by human teeth, or by those of lower animals, and attached to remaining natural ones by means of gold wires and bands, clearly indicate that the Etruscan dentists were not only skilful in the manipulation of gold, but

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also that they were familiar with a variety of the requirements of dental bridgework. (Fig. 226.)

This is also seen in the efforts of the Romans who, it is recorded, constructed both *fixed* and *removable* appliances. While perhaps not attaining to quite so high a degree of artistic excellence, they nevertheless show their familiarity with the possibilities and requirements, and exhibit a surprising degree of mechanical ingenuity.

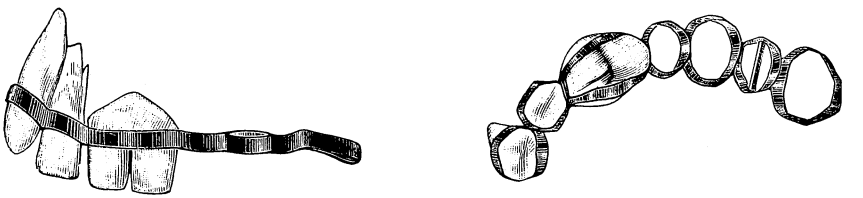


Fig. 226.

Whether or not such efforts became a lost art during the middle ages is of course not known, but as with all sciences and arts it is presumed to have at least suffered a period of marked decline.

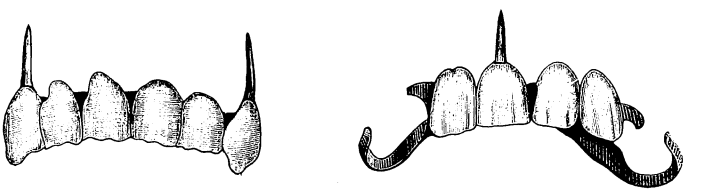


Fig. 227.

In any event the beginning of a revival of these ancient methods was not marked until the early part of the last century, and, as with dentistry in general, and dental prosthetics in particular, the primary evidences of the advent of its evolution doubtless came from the French.

While a few crude reports of isolated cases preceded it, the first presentation of methods for thus supplying missing teeth was probably made by F. Maury in a work entitled "A Treatise on Dental Art," published in the French in 1828, and translated by J. B. Savier in 1843. Among several illustrations of methods of supplying artificial teeth which are to be found in this early work, are at least *two* wherein remaining teeth, or roots, afford the sole means of attachment for the substitutes, without any apparent effort to secure stability by resting or impinging to any extent upon the adjacent soft tissues. (Fig. 227.)

The substitutes used at that time were largely those which had been carved from the "sea-horse" tooth, though the use of the crowns of human teeth so modified as to meet the requirements, is mentioned, and in some places occur descriptions of porcelain—or as they were then called *incorruptible*—teeth.

Development.

That which has been termed the "progenitor of modern bridgework" is recognized as having been first suggested by Dr. W. A. Dwinelle in 1856, when a description of a method of adapting a plate to the end of the root and

Fig. 228.

attaching an artificial tooth to it, was further supplemented by the statement that "the plate may be carried across an intervening space unoccupied by roots and an unbroken row of teeth mounted upon it."

However original this idea may or may not have been, it nevertheless sounded the tocsin for a revival of the methods of greater or less antiquity

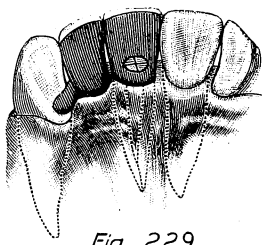


Fig. 229.

and marked the beginning of an era of development which has resulted in the methods of today, and which development also must redound to the credit of American dentistry.

In 1871 Dr. B. J. Bing contributed largely to this development by devising an artificial tooth made of porcelain, and having a platinum bar projecting from each lateral side, the ends of which were to be anchored in fillings in the adjacent natural teeth. (Fig. 228.) This became known as the "Bing bridge," and, while applicable only to the replacement of a single tooth, its introduction nevertheless marked the advent of the modern application of *fixed* bridgework, for which its designer must be accorded the credit.

APRIL

Shortly after this, in 1873, that great American genius Dr. W. G. A. Bonwill devised and presented a type of removable bridge wherein a metal tube, previously threaded on its inner surface, was mounted in the root canal, and used as a means of affording attachment for a removable crown. The crown was adapted to the root and sustained in position by a threaded dowel which passed through a perforation in its base and engaged with the tube, and was capable of carrying one adjacent tooth when provided with a means of preventing rotation. (Fig. 229.)

Those devices of mechanical and artistic ingenuity, however, which may now be classified as modern dental bridgework, had their beginning with the advent of the gold shell or telescope, and the band and dowel crowns; and hence, the practical application of this class of work, on modern lines, dates back only to the period between 1878 and 1883, when the usefulness of these styles of crowns first became recognized.

Since this time the development of methods involving various principles has been so rapid as to preclude further enumeration of any except those the application of which is regarded as being practicable at the present time.

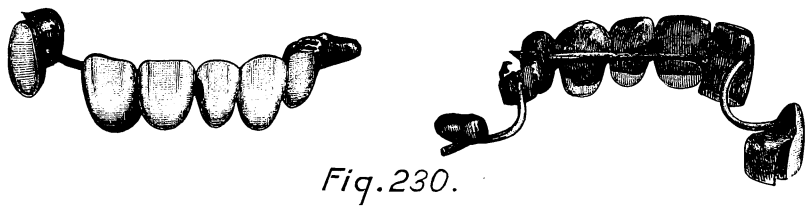


Fig. 230.

Ethics.

Before entering upon a description of any of the various methods of procedure now employed, however, there are certain fundamental considerations of sufficient importance to demand special emphasis; not the least among which is that of ethics.

The many objectionable features incident to the wearing of "plates" and other forms of artificial dentures which derive their stability from impingment upon the soft tissues of the mouth, has caused the profession to be so deluged with a multitude of devices for overcoming such objections as, almost of necessity, to result in many of them proving absolute failures when subjected to the test of practicability. Hence the application of dental bridgework, even of the more modern forms of construction, like almost every other human effort, has been subject to both use and abuse, and has been productive of both good and evil.

As any art must undergo its experimental stages, however, overenthusiastic and perhaps even indiscriminate application could not be well avoided, and such failures as must result therefrom should by no means provoke irrevocable condemnation. On the contrary, since it is by our failures that we learn and profit most, many of them were only a logical sequence, and have been but steppingstones to the gradual process of development.

That a large proportion of the early efforts in this direction were not highly successful must be conceded, but many of them were failures not so much because the underlying principles were wrong, but largely because of failure to properly observe them. Yet a proper observation of such principles could not well obtain until they became definitely known, and they could not become known except through experience.

Fig. 231.

A typical case of absolute ignorance of, or indifference to, the underlying principles and mechanical requirements, is shown in Fig. 230, where a cap without a dowel and two partial crowns were expected to support, and thus do the work of eight or nine teeth. The application of such devices could only invite and result in failure of the most pronounced type, but fortunately would usually do but little injury to the abutment teeth because of possessing so limited a degree of permanency.

Evil Effects.

It is true, however, that much *unnecessary* evil has occurred, but the greatest proportion of such results can undoubtedly be traced directly to the degree of over-enthusiasm, and pecuniary greed, which has induced an injudicious and indiscriminate application at the hands of uneducated, unskilful and unscrupulous operators.

Such lamentable efforts as these usually come from the hands of those who conduct the so-called "dental parlors" and make "teeth without plates;" where many teeth are crowned which should and would otherwise be filled; where the application of a glaring gold crown on any tooth, or bridges like those illustrated in Fig. 231 is but the work of a few moments; and where the salvation of a tooth, the development of an art, and the honor of a useful profession is sacrificed on the altar of Mammon.

In the "bridges" illustrated the one designated "A" shows where

five teeth are attached to two gold crowns adjusted to teeth which have received no preparation whatever; and "B" shows the two laterals suspended by three simple bands, also similarly adjusted. While the former was doubtless capable of affording some degree of permanency, yet it would indeed be difficult to conceive of anything more inartistic; and the latter, while almost equally inartistic, could only result in the disintegration or loss of the teeth thus banded.

Indeed, above all others, the one practice which has done more to retard the development of this art along practical and mechanical lines, and which has been productive of a most baneful influence upon supporting teeth, has been that of the indiscriminate and pernicious use of *simple bands* for supporting missing teeth.

This utter disregard for the laws of mechanics and hygiene, and for the requirements of art and esthetics which successful application of this art demands, has undoubtedly resulted in a class of work which could only prove to be a positive source of injury to the teeth and health of the victim, and which could also but invite the premature loss of a multitude of good sound teeth, and much attending discomfiture, and discouragement.

Notwithstanding these flagrant evidences of *commercial* dentistry, the development of this art in the past decade has placed it upon a sound scientific and practical basis; and if its application be so governed, and conscientiously made, there should be no reasonable excuse for the loss of teeth, or for failures.

Good Effects. The real benefit which has been derived by both the profession and the laity from a judicious and skilful application is beyond comprehension or contradiction. As pertains to the profession, the advent of bridgework has been the means of affording a training in artistic and mechanical technique unequaled by any other phase of dentistry, and the possibilities, which were early recognized, have served as a constant stimulus to the inventive genius of its members.

It has served to make the operator a better mechanic, and consequently in turn a better operator, and also to increase his artistic attainments and thus make him a better dentist. Unlike the advent of vulcanite work it has brought the two departments of practical dentistry into closer relationship, and has elevated the art of dental prosthesis beyond the sphere of mere laboratory mechanics.

In so far as benefits to the laity is concerned there can be no doubt but that a well-planned, skillfully executed and properly adjusted bridge, when indicated, will contribute much to the comfort and health of the patient who is thus disfigured by the premature loss of natural teeth.

To obtain these desirable results in a large proportion of cases has been made possible by the development of this art, but their achievement demands a broad and liberal knowledge of the requirements; underlying principles and limitations, and a thorough and conscientious execution of the details.

In this connection it must be remembered that the conditions with which we meet vary to a greater or less extent with each individual case, and that no mechanical device which is designed to become a part of the human economy is capable of universal application.

Hence it is the duty of the conscientious operator to study each case presenting with a view to accomplishing, not in the most simple or expeditious manner, but in the best and most favorable manner those results which in his judgment will seem to offer the very highest possibilities from the combined viewpoints of simulating nature and restoring lost function.

If he be not qualified to do this, or is unwilling to do it conscientiously, he has no right to inflict unskilful or indifferent services upon a confiding patron.*

*An acknowledgment of indebtedness for some of the references made and illustrations used in this chapter, is hereby made to Dr. Vincenzo Guerini, of Naples, Italy (*Dental Cosmos,* January, 1901); Dr. M. L. Rhein (*Dental Cosmos,* February, 1894), and to the "American System of Prosthetic Dentistry," and Evans' "Crown and Bridgework."

The Relation Between Orthodontia and Prosthodontia.

By Frederick A. Peeso, Philadelphia, Pa.

Read before the American Society of Orthodontists at Buffalo, December, 1903.

Every one who has made a careful study of these subjects must be thoroughly convinced of the intimate relation which exists between orthodontia and prosthodontia. Not every one, however, has made such a study of the problems which these important departments of our art present, hence it very frequently happens that the specialist in either department keeps his mind so intently fixed upon the details comprised in his own field of work that he loses sight of the important relations which all departments of dentistry bear to each other. The closeness of this relationship cannot be better exemplified than by a comparison between orthodontia and prosthodontia, the objective purpose of each being precisely the same, notwithstanding the fact that the end in each case is sought to be obtained by widely different means.

Orthodontia, as shown by Angle, is the science of normal occlusion. The problems which it presents for solution to the practical dentist are the problems of the restoration of normal occlusion. Precisely the same problems are those which are presented to the prosthodontist for solution, albeit, his work is complicated by the factor of restoration of lost structure in addition to the problem of occlusion.

It often happens that the services of the specialist in one of these branches will be of no real benefit to the patient without the assistance of

the other. In very many cases where bridgework is indicated, it would be of little or no value unless the teeth were first brought into their proper position in the arch. On the other hand, where the services of the orthodontist have been employed, the benefit would be but temporary without some permanent appliance to retain the teeth in position and restore the lost organs of mastication. By being permanent, it is not meant that the appliance must of necessity be so fixed that it cannot be removed from the mouth, but that it can be retained in the mouth for a long period of years, holding the parts firmly in their natural position in the arch and at the same time enabling them to perform their normal masticatory functions.

There are various appliances which may be used for this purpose, but the question is, which will do the work best and which approaches most nearly to Nature in making this restoration. Of course the same appliance would not answer in every case. In some instances a partial plate might be indicated, but in the opinion of the writer, in the great majority of cases a well made and perfectly articulated piece of bridgework constitutes the best of artificial substitutes for the lost organs and will perform the varied functions required of it better than any other appliance which is as yet known to the dental profession.

In many of the cases presented for treatment, the teeth have been lost at an early age and in restoring them, it is well to consider the relative permanency of bridge restorations. The life of a bridge depends primarily entirely upon the proper preparation of the abutments and the accurate fitting of the bands. These must be so prepared and fitted that there will be no irritation around the neck of the tooth from the bands cutting into the soft tissues. If the conditions are favorable and the work is properly done, there is no reason why it should not last practically for a lifetime. It is certain that after being in the mouth for fifteen years it will seemingly be in exactly as good condition as when first put in place and the chances are that it will be the same fifteen years hence. If the teeth are not properly prepared and the bands are ill fitting, the bands together with the cement will irritate the tissue to such an extent as to result in the loss of the tooth in a few years.

In order to be effective and get the best possible results, each case must be studied separately and carefully in every detail. The question of abutments must be considered, as to their relative strength, position and condition. The articulation, too, is of the greatest importance and cannot receive too careful attention, as the additional work which is put upon the roots which are to serve as abutments will not strain them nearly as much if there is a perfect articulation. On the other hand, let the preparation of the teeth and the prosthetic work be never so well done, if the piece be

badly articulated, abnormal conditions are created which will not only impair the usefulness of the denture, but may within a comparatively short time not only entirely destroy the supports and injure the adjoining teeth, but may bring about very serious pathological conditions.

Fixed Versus Removable Bridgework.

If it be decided that bridgework is best adapted to meet the requirements of a given case, it is well perhaps to discuss at this point the relative value of fixed and removable work. It is unquestionable that if a removable appliance can be constructed which, when in position, is held rigidly in place, will resist wear and can be readily detached, it would be preferable to one which was permanently fixed. Such attachments can be made, which after years of use will show practically no wear at all and will be held as tightly in place as when first put in the mouth. This, too, where the piece is removed at least once every day and often many more times; but in making attachments of this kind, there must be the greatest accuracy or the piece will be worthless. There is hardly a case where fixed bridgework is used, that removable would not answer as well, or be very much better than fixed.

Of the many advantages which removable bridgework possess over fixed work, the first to be named is its hygienic properties. No one can deny that a bridge which can be removed from the mouth, cleansed and sterilized in boiling water, if desirable, is far more cleanly and far less liable to become foul than is one which is permanently fixed and can only be cleansed in the mouth. In many cases where fixed bridges are worn, the mouth becomes so foul and the breath so offensive as to be almost unbearable, even when the best of care is given them. Another point in favor of removable work is the facility with which it can be repaired in case of accident and also the ease with which the adjoining teeth can be reached in case of decay or accident.

Any one who has undertaken to insert a gold filling in the approximal surface of a tooth adjoining the abutment of a fixed bridge, can appreciate the difficulties of such an operation. It is necessary to get a much greater separation than where no bridge is worn, as the rubber dam cannot be put on over a fixed piece. If the bridge be removable, it has simply to be lifted off, the rubber dam adjusted and there will be ample room to prepare the cavity and insert the filling without further separation, or if the anchorage be such that there will be no separation on the removal of the piece, the separation can be easily made after the bridge is off and the dam will include the abutment. Another advantage is that in case of any pathological conditions of the mouth arising which might make it desirable to have the piece out of the mouth for a time, if it is a fixed bridge which the patient is wearing, it will be necessary to cut and mutilate it in removing

so as perhaps to destroy it, while a removable bridge can be detached almost in an instant.

Last, but not least in importance is the fact that the making of removable bridgework is conducive to finer workmanship, as it requires far more skill than does fixed work. A great deal of fixed bridgework is put in the mouth, finished or unfinished in a manner which it would not be if it were possible for the patient or for another dentist to remove the piece for inspection. Of course this should not be, but it is so, nevertheless, and there are probably few who will dispute the truth of this assertion.

The only objection that can possibly be made to bridgework in cases of this kind is that for either a fixed or a removable bridge it is generally necessary to devitalize at least one of the teeth which are to serve as abutments.

It is not the intention of the writer to enter into any discussion at this time as to whether or not it is good practice to sacrifice a living pulp in order

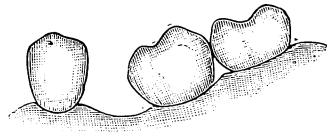


Fig. 1.

to anchor a bridge, but an experience of fifteen years seems to show that a devitalized tooth will give as good support and stand the strain equally as well as one in which the pulp is alive. This seems to prove that it is perfectly justifiable to sacrifice one tooth, where by so doing the patient is given the use of many. Not only the teeth which have been lost, but the occluding teeth as well are brought into use, restoring their normal function which is necessary to keep them in a healthy condition and prevent them from elongating and being gradually thrown out of the mouth. It is a case where the end justifies the means.

Bicuspid Abutment. One of the cases most commonly met with and which we will first consider, is that in which the lower first molar or first molar and second bicuspid have been lost, with the inevitable result of the tilting forward of the second molar, partially closing the space and not only destroying the articulation of the teeth immediately involved, but frequently changing it all around the arch. (Fig. 1.) Of course this space can be filled by crowning the molar and exaggerating the contour so as to bring it in contact with the bicuspid, or by swinging a dummy to the crown. This might prevent further change, but the great mischief has already been done and wher-

ever it is practicable, the patient should be referred to the orthodontist whose services are here clearly indicated; but it is useless to think of restoring these teeth to their normal position and correcting the articulation, unless there is to be some appliance made which will permanently retain them in their places; otherwise there would be a quick return to the abnormal condition.

There are several different styles of abutments, any one of which may be indicated according to existing conditions, and also different ways of making a bridge for a case of this kind. As a general thing it is necessary to devitalize but one tooth when there is but a short space to be filled in, and that is the one which is to serve as the principal abutment. By the principal abutment is meant the one which forms the main, or retaining support. Which tooth this shall be, depends upon the condition of the two supports and the particular kind of a bridge that is to be used. If the bicuspid is somewhat decayed or broken down, it is generally well

Fig. 2.

to make this the principal abutment. The tooth should be devitalized, the canal somewhat enlarged and the apex filled. In the mouth of a lady, or of a gentleman where a gold crown would be at all conspicuous, it is best to cut the tooth down nearly to the gum line and prepare the root in the same manner as for a Richmond crown, by entirely removing the enamel and leaving the root so that its greatest diameter is about one-sixteenth of an inch under the gum. A band of No. 30 gauge coin gold is fitted to it, carefully festooning to follow the margin of the gum, after which the end of the root is cut down to a point just below the gum on the buccal side, but leaving it about one-sixteenth of an inch above it on the lingual side. (Fig. 2.) The band is now replaced and marked around the inside close to the edge of the root with a sharp instrument. The canal is then enlarged to the size of the tube which is to be used. If a gold bridge is to be made, the reamer should be leaned toward the lingual side, thus sloping the enlarged canal in that direction, so that when the tube passes through the floor there will be ample room on the buccal side for the facing. If there is sufficient depth to allow of using a porcelain bridge, it is enlarged on a line with the canal. The tube is then placed in the canal and a plaster impression, just large enough to keep the relation of the band and tube, is taken.

A small model is then made, the inside of the band and the outside of the tube having first been given a very thin coating of wax to facilitate their removal from the cast. The band is now cut off to the line and flush with the end of the root, filed so that it is perfectly flat and a floor of No. 28 gauge coin gold sweated or soldered to it. A hole is next made in the floor and the tube waxed and soldered the same as the pin in a Richmond cap, after which the open end extending above the floor is cut off and the cap finished and polished. (Fig. 3.)

The removable part of the abutment is made as follows: The pin of half round iridio-platinum or of platinized gold wire, is bent double, the

Fig. 3.

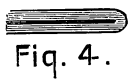


Fig. 4.

Fig. 5.

Fig. 6.

ends just caught with a little pure or coin gold, and filed or turned to exactly fit the tube in the cap. (Fig. 4.) A floor of No. 28 coin gold, or of iridio-platinum, if the piece is to be of porcelain, is then drilled so that the pin will fit tightly and waxed in place, removed, invested and soldered. (Fig. 5.) After cleaning in acid, it is replaced on the lower cap, trimmed

Fig. 7.

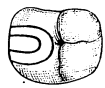


Fig. 8.

Fig. 9.

even with the sides all around and a half band of No. 28 coin gold or iridio-platinum fitted to the lingual side, reaching only to the gum line, and toward the buccal side to a point about where the facing will reach, when it is waxed, removed and soldered. (Fig. 6.) The inner cap is then placed on the root and is ready for the impression and articulation.

If the attachment has been accurately made and fitted, it will not be necessary to devitalize and crown the molar. This minor support can be prepared in the following manner: A cavity is made in the mesial side of the crown of the molar, extending back about half the length of the occlusial surface. (Figs. 7-8), and a hard gold filling inserted. It must be very thoroughly condensed and preferably made of No. 60 rolled gold, as this makes a denser filling. A groove is then cut in the filling and is countersunk at the distal end far enough from the mesial so that there will

be no possibility of its giving way under the stress of mastication. (Fig. 9.) If the upper teeth have elongated, they should be ground away to the normal line and carved so as to represent the natural cusps and preserve the inclined planes. The articulation should be taken in plaster of Paris, as in this way only, can the correct occlusion be gotten. If a saddle is to be used, it should be struck up and connected with the abutments before the articulation is taken. (Fig. 10.) The model is then prepared and the bridge made and finished. (Fig. 11.) It is best to put an orange wood stick or something between the abutments to keep the space from closing up while the bridge is being made, as sometimes the teeth will move very rapidly. The spur can be made of round iridio-platinum or platinized gold wire of No. 14 to 16 gauge. A bridge of this kind is very strong, the spur resting in the gold filling in the molar getting the full support of that tooth and the hook overcoming the possibility of the teeth spreading,

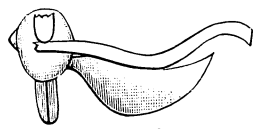


Fig. 10.

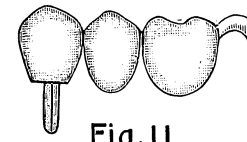


Fig. 11.

while the split pin and half band hold the piece rigidly in place. If it is to be a porcelain bridge, a very thin piece of mica should be placed between the halves of the pin to prevent their being soldered together while the piece is being fired.

Molar Abutment. Where the molar is to be the principal abutment, the attachment is made differently from the bicuspid. A simple telescope crown will not answer where there is to be but one principal attachment to a bridge unless the crown be very long, which is very seldom the case; but if there are two principal abutments, they will do the work satisfactorily.

There are several different styles of abutments which can be used, but only two will be described, one where the tooth is ground away for a cap and the other where the natural crown of the tooth is preserved. The first of these is the combination of the telescope crown with the tube and split pin and forms one of the best of abutments for cases of this kind. The tooth is devitalized and prepared as for a full gold crown, being cut low enough to allow of placing a good thick cusp. The band is then made so that its sides are exactly parallel, or very slightly larger at the neck, fitted to the tooth, going about one-sixteenth of an inch below the gum and marked around the inside even with the top of the stump. A tube of suitable size is used, resting it on the floor of the pulp chamber, or if this

is very shallow one of the canals can be enlarged for a little distance, and the tube adjusted in place so that it is exactly parallel with the sides of the band. (Fig. 12.) An impression is now taken to preserve their proper relation, the band and tube waxed in the same way as described in the bicuspid attachment and the model made from hard plaster. After it has been separated, the band and tube are heated slightly and removed. The band is then cut off even with the top of the stump, filed perfectly flat and a floor of No. 28 coin gold sweated to it, after which the tube is fitted and soldered and the cap finished as in the case of the bicuspid. The whole inside of the band is then given a very thin coating of wax and

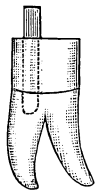


Fig. 12.

Fig. 13.

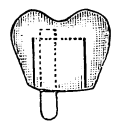


Fig. 14.

it is filled with fusible metal. The outer band is made a little small and driven over the reinforced inner cap to within about one-sixteenth of an inch from its lower edge, so that it will only reach to the gum line and not go below it. (Fig. 13.) It is then cut off and filed flush with the inner cap and the floor sweated to it. The contour is now put on and the split pin soldered in place, letting it extend a little above the floor so that it may be firmly attached to the cusp. After the cusp has been selected, the under surface is filed perfectly flat and soldered to the cap, a hole having first been cut in it to receive the head of the pin. After it is finished and polished, it presents the appearance of an ordinary contoured full gold crown. (Fig. 14.) The bicuspid is prepared in the same way as the molar previously described, the filling being inserted in the distal side to allow of having a good thickness of gold between the spur and the tooth structure, grooved and countersunk, after which the inner cap of the molar is put in position, the articulation taken in plaster and the bridge made as in the previous case.

Inlay Abutment.

The other attachment which will be described and to which the writer has given the name of "Inlay Abutment," has proven very satisfactory for years and is as follows: The molar is devitalized and cut out on the occlusial

surface about one-half the length of the crown and down on the mesial side to allow for a heavy round bar of about No. 13 gauge and a good thickness of gold. (Figs. 15-16.) The pulp chamber is filled with gutta percha and the cavity shaped about as in (Fig. 15), leaving the sides curved and non-retentive. Pure gold of No. 34 or 35 gauge is then burnished into it as for an inlay, care being used to have the margins perfect. A hole is then made near the distal end of the matrix and through the gutta percha to the floor of the pulp chamber and in it is placed an iridio-platinum tube large enough to take a No. 13 or No. 14 wire pin. Wax is packed tightly in the matrix and around the tube. It is then removed and


Fig. 15.

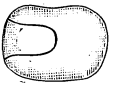


Fig. 16.


Fig. 17


Fig. 18.

after placing a piece of pure gold across the front so that it can be entirely filled to that point, it is invested and filled with coin gold, thus making a perfect gold inlay with a tube extending through it. (Fig. 17.) A groove is now cut from the tube to the mesial end of the inlay. The bulk of the cutting can be quickly done with a thin, round-edged carborundum wheel (Fig. 18), and finished with a fissure bur of the same size (Fig. 18)

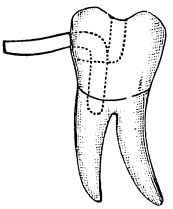


Fig. 19.

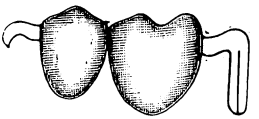


Fig. 20.

or slightly larger than the inside diameter of the tube. A flame-shaped finishing bur can be used to round the corner at the entrance to the tube and to give a slight downward slant to the mesial end so that the bar will not come above the cusp of the dummy. Fig. 19 shows a section of the inlay and tube in position in the tooth with the bar and pin in place. The bar and pin is made of half round iridio-platinum or platinized gold wire, bent double and soldered to within about a quarter of an inch from the end and filed or turned to exactly fit the tube and groove. It is then bent so that it will lie in the groove closely and the closed end filed so that the

pin can be slightly opened, giving it a spring which will hold the piece firmly in place. The bicuspid is prepared with the grooved and countersunk filling. The inlay with the pin in position is then placed in the tooth and the articulation taken in plaster, the inlay coming away in the impression. The model is then prepared and the bridge made, the bar being soldered solidly into it. (Fig. 20.) When it is finished, the sides of the inlay are roughened or grooved slightly and it is connected with the bridge and cemented as though it was a fixed piece.

This attachment has been employed with great satisfaction for a number of years in molars and in a few instances in bicuspids, but good judgment must be used, as the bicuspid is a much weaker tooth than the molar. It has also been used for a long time in a modified form for gold crown abutments with unvarying success.

Cuspid Abutment. In cases where the bicuspids have been lost, the writer has for many years made use of the split pin and tube, with the hooked spur resting in a filling in the molar. The cuspid is devitalized and the canal enlarged to the size of the tube to be used. The split pin is made and bent in the desired form and with the tube is placed in position in the tooth, the impression and bite taken and the bridge constructed. When it is completed, a little wax is put around the pin at the entrance of the tube to prevent any cement from working into it and the piece is cemented. When the cement has hardened the bridge is removed, the rubber dam adjusted and after a little of the cement has been cut away from around the end of the tube, a tightly fitting polished steel mandril is inserted and a gold filling packed tightly into the cavity around the pin and over the end of the tube, thus perfectly sealing it in so that there is no possibility of the cement washing away. The pin is then removed and the filling finished and polished. This makes a serviceable attachment and has also been used many times in restoring upper central or lateral incisors which have been lost, and even when all of the incisors have been gone, by using both of the cuspids.

When one of the centrals are missing, the tube can be placed in the remaining central and the hooked spur in a gold filling in the lateral, just at the basilar ridge. When a central and lateral are lost, the tube is put in the cuspid, and the spur in a filling in the remaining central. It also forms an excellent support where the first bicuspid and lateral incisor are gone, the cuspid being tubed and spurs from the dummies resting in the central incisor and second bicuspid.

The advantage of the hooked spur is that it prevents the teeth from spreading, at the same time giving a strong support and also affording a slight natural movement to the teeth, which is desirable.

The student of the history of dental art cannot have failed to notice the tremendous improvement in method and scientific conception of the

objects to be obtained by restorative operations of the modern type as compared with those of our predecessors. Improvements are being constantly made and strenuous efforts are being put forth in these latter days for the attainment of ideals in dentistry not conceived by our forefathers. Nothing has contributed so much to this satisfactory state of affairs as the respectful consideration which the majority of our profession accord to the importance of underlying principles. The reduction of orthodontia to a sytematic basis, which has been made possible by the enunciation of Angle's classification, has contributed much to our advancement, but its applicability is by no means limited to the correction of malpositions of the teeth, for it should be and must be the foundation of all the restorative procedures of prosthodontia, including crown and bridge work.

If I have succeeded in commending this fact to your favorable consideration, I shall have attained the object for which this paper was prepared.

Artificial Substitutes for Missing Teeth in Orthodontia.

By Hart J. Goslee, D.D.S., Chicago, Ill.

Read before the American Society of Orthodontists, December, 1903.

Were it not for the assignment to me of the title for this paper, I should much prefer to designate it "A Few Principles and Methods in Crown and Bridgework as Applied Particularly to Orthodontia;" but I am so appreciative of the courtesy which has been extended to me, and of the privilege which I now accept, that I would regard changing the title an unbecoming presumption, and one which would scarcely express my high regard for this body, and for the grand work which it has accomplished during its brief existence.

If it were not for the *art side,* the profession of dentistry might properly be regarded as but a specialty of medicine. The requirements and possibilities along this particular line, however, make it of necessity a distinctively separate profession; and an appreciation and development of these has enabled it to assume its present high position among the arts and sciences of modern times.

What the specialty of crown and bridgework has contributed to the development of the *art* in dentistry, the later advent and marvelously

rapid development of the specialty of orthodontia has in turn contributed to its *scientific* advancement. Thus do we find these two important specialties, embracing individual fields of usefulness, closely related to each other, because of having been stepping stones as it were in the progress of the profession, and in its establishment to the position which it now occupies.

If this relationship should be regarded as a more or less sentimental one, we need only to think of the closer ties which exist because of what the one requires of the other, and what, in the language of the founder of this Society, "must be more and more required, and continue to be required as modern orthodontia is better appreciated and more intelligently practiced."

In the almost unprecedented development of the specialty of orthodontia, and with its establishment upon broad and sound scientific principles, we have come to learn, and to appreciate, the great importance which must be attached to the possession of a full complement of teeth, or its equivalent, and to the establishment and permanent maintenance of their normal relations.

We have learned that these conditions are not only essential to the proper mastication of food, but also, and of almost equal importance, that they are essential to the proper production of the vocal tones, and to the art relations which may bring about harmony, and thus in turn be productive of typical and normal physiognomy.

The achievements already made in the practice of modern orthodontia have afforded this revelation, and the practical application of the science now readily admits of the readjustment and rearrangement of abnormal relations in such manner as to bring about these infinitely desirable results.

Here, however, is where the true relationship between the specialties of orthodontia and crown and bridgework, and the dependence of the one upon the other, are manifest, because it is also recognized that a preservation of the conditions which have thus brought about comfort and usefulness, harmony and relief from disfigurement, can only obtain permanently through the establishment of normal relations, and that this may only be accomplished by the substitution of artificial teeth for those which are missing, and which, in many instances, are the abiding cause of malocclusion.

It would seem but reasonable to look to crown and bridgework for methods of procedure most applicable to a large proportion of cases, by which means we may be enabled to conserve to the highest degree of artistic and mechanical requirements, and at the same time hope to obtain, the most favorable prognosis in the replacement of these missing teeth.

The problem, however, as to how best to replace those teeth which have been lost through what may properly be termed criminal negligence, or those which are missing as a result of non-eruption, or lack of tooth germ development, is always, and necessarily so, a serious one, for at least three reasons. *First,* we must of necessity involve the possible integrity and longevity of adjacent, perhaps sound, teeth. *Second,* because the replacement is usually indicated at such an early period in the lifetime of the patient as to demand that a maximum degree of permanency be obtained from the method adopted. And, *third,* our efforts are confined to environments which present so great a diversified range of conditions as to preclude the adoption of any one general line of procedure.

First Molars.

The teeth which are most generally lost as a result of the ravages of decay, and ignorance or indifference on the part of parents or guardians, are the first molars—the keystones of the arch—those particular teeth, the presence of which is so essential to the maintenance of the normal relations of all of the other teeth in the denture; and, further, those teeth which are situated in the immediate center of the masticating area, and which must thus necessarily receive such a degree of masticating stress as to usually demand a maximum element of strength and durability in the artificial substitute.

Unerupted Teeth.

The teeth which are most frequently missing through failure to erupt, or because of lack of tooth germ development, are the lateral incisors and bicuspids, and in these cases, where the same requirements of stability in the substitute are so apparent, we also demand higher esthetic results because of the fact that they are within the range of vision.

A recognition of the fallacy of the former practice of sacrificing a corresponding tooth in the same arch to compensate for the loss of another, and as a means of correcting the malposition, has demanded the replacement of such teeth as may thus be missing, even though the replacement may necessitate the expenditure of time sufficient to gain adequate space, and be made even at the expense of a possible injury to the adjacent tooth or teeth, which must be utilized to support the substitute.

The problem which confronts us in considering the replacement of such missing teeth in a manner which will conserve to the highest esthetic and mechanical requirements is, in my opinion, altogether one of the *methods of attachment* which may be indicated and employed.

Dummies Attached to a Single Tooth.

As applied to supplying missing teeth, anterior to the first molar in either arch, it is my belief that we can accept as a cardinal principle this assertion—that one tooth *under favorable conditions* may be ex-

pected to perform the function or to do the work of *two*. The provision designated as "under favorable conditions," however, would necessarily make one general requirement, and one emphatic exception.

The requirement would be that there should invariably be observed some means of preventing the rotation, on its long axis, of the tooth used as the abutment, which would likely result because of the leverage afforded by the suspended substitute; and the exception would be that the abutment tooth must possess a degree of stability *greater* than that required of the missing tooth.

An analysis of this fundamental and mechanical principle would compel us to conclude that it would not be practicable to expect a lateral incisor alone to support a central incisor or a cuspid; a *first* bicuspid to support a *second* bicuspid, or a second bicuspid to support a first molar, because the requirements of the tooth thus supplied would exceed those, and the consequent stability, of the abutment tooth itself.

On the other hand, however, if the occlusion is, or may be made, favorable, we can rely upon the central incisor or cuspid to support a lateral incisor; a second bicuspid to support a first bicuspid, or a first molar to support a second bicuspid, because in these instances the abutment tooth naturally occupies a more favorable location in the arch to withstand stress, and possess a greater degree of stability than would be required of the missing tooth, which is thus suspended. In all of these instances, however, the suspended tooth must not be allowed to act as a lever, and thereby produce a possible tendency toward the subsequent rotation of the abutment tooth.

And, further, as the power of the lever increases in proportion to its length, or the distance between its extreme end and the fulcrum, and as the abutment tooth becomes the fulcrum, whenever more than one tooth is to be supplied, a *secure attachment upon each end* is always an absolute requirement.

In the treatment of such cases as frequently present themselves to the orthodontist, I am free to confess that the problem as to how the desired result may be best accomplished is at all times a difficult and perplexing one.

It is to be so regarded for two reasons. *First,* because of the fact that the required procedure is usually indicated at such an early period in life as to demand such a form of substitute as may reasonably be expected to afford the desired esthetic effect; to certainly maintain the space, and further to answer the purpose of mastication, in a manner which will necessitate or result in as little injury to the teeth used as abutments as possible and consistent with the requirements, and in a manner which will

also offer the greatest possible degree of strength and permanency. And, *second,* because of the previously mentioned fact that no one method of procedure may possibly be regarded as universally applicable.

Hence, since this particular subject has thus necessarily resolved itself into one of *methods of attachment,* a consideration of these, preceded by the few cardinal principles already submitted, will practically cover that which may possibly be expected of me in its presentation at this time.

Supplying Lateral Incisors.

In supplying missing lateral incisors, the methods of attachment which may be employed to the best advantage in fixed bridgework may be divided into two general classes: those which involve the devitalization of the pulp in teeth which are to be used for abutments, as a means of affording accommodation for the root-wise reception of a dowel in their canals; and that class of procedures wherein the attachment may be made to the crown of the tooth without necessitating the destruction of the vitality of the pulp, and, in consequence, with a minimum of injury to the crown.

In the former class the attachment may be made by two modes of procedure: Either by sacrificing the crown of the adjacent central incisor or cuspid, and replacing it with an artificial substitute; or by involving only the lingual surface of the natural crown, and using an inlay and dowel.

Artificial Crowns.

The practicability of sacrificing the natural crown of a tooth for the purpose of replacing it with an artificial substitute as a means of affording opportunity for the attachment of the tooth to be supplied is always, particularly in early life, and especially because of the probable incomplete development of the root, to be regarded as a serious problem.

While it is true that such a procedure will invariably offer a maximum degree of stability in the attachment, and of permanency in the operation, yet, in my opinion, it is warrantable only in proportion to the accuracy obtained in the adaptation of the artificial crown, and of the degree of esthetic perfection achieved in its adjustment.

We do know that a good, well made, artificial crown, which has been accurately fitted to a central incisor or cuspid root, and which is then further provided with a rest against the lingual surface of the adjacent natural crown, to prevent rotation, will carry a lateral in a manner which justifies a prognosis of reasonable permanency. Yet whether this seemingly ruthless destruction of the natural crown for this purpose, and particularly in the mouths of patients of tender years, is warrantable or not, is largely a question which may only be determined by the discretion and good judgment of a conscientious operator.

If there be caries in, or other disfigurement of, such natural crowns, then such a procedure may be indicated, irrespective of age, but otherwise I am of the opinion that less radical means should usually be employed, principally for the reason that this particular mode of procedure may be then observed at any subsequent time, or after the possible ultimate failure of some other method of attachment.

Inlay and Dowel. A less radical and more or less secure means of attachment for such teeth may be obtained from the insertion of an inlay of gold, or of platinum alloy solder, into the linguo-approximal surface of the tooth to be used as the abutment, supplemented with a dowel extending a short distance into the canal to preclude its displacement, and in further combination, of course, with a rest to prevent rotation.

While the destruction and removal of the pulp is also indicated in this method, and while some discoloration of the crown may result in consequence, still, such a procedure is infinitely less radical than the former, in that the natural crown is preserved.

The success of this method of attachment will depend upon cutting a cavity of suitable proportions to carry the margins to immune or self-cleansing areas, or to a point beyond that of contact with the artificial substitute attached thereto, and of proportions which will cause the inlay to possess sufficient rigidity and strength to insure adequate integrity, and will further increase, of course, in proportion to a definite observation of these requirements, and of the accuracy of the marginal adaptation between inlay and tooth structure.

In considering the methods which have been designated as belonging to the latter class of attachments, wherein but little, if any, material destruction or mutilation of the natural crown is required, we come to that class, of course, which would seem to involve the ideal procedures as applied particularly to young patients.

Among many variations of methods of this class, we have at least three which may be found to be often applicable, and wherein their employment may be made more or less artistic and serviceable. These consist of a plate accurately conformed to the entire lingual surface of the natural crown, and sustained and protected against displacement by the use of small vertical pins—the so-called Carmichael attachment—and open face crowns.

Lingual Plate. The close adaptation of a plate of pure gold or platinum to the entire lingual surface of the crown of the tooth used as the abutment, fortified against the possibility of displacement by having two small pins pass through it and into the tooth just far enough to insure stability, without impinging upon

the pulp, and the whole then adequately reinforced, offers a method favorable both to the artistic requirements in, and to the durability of, the substitute.

Where the margins of such an attachment may be brought to a point offering favorable immunity to the lodgment and accumulation of food products, and where the occlusion of the opposing teeth will, or may be made to admit of ample reinforcement to insure strength, this method seems to offer opportunities for esthetic and practical results, in quite a large number of cases.

To obtain such results, however, these two requirements are essential, and must be observed, as must also the aforementioned provision against rotation. This latter may oftentimes be obtained to better advantage by the use of this attachment upon each end of the suspended tooth.

The method seems more particularly applicable, however, to the incisors than to the cuspids, because their location offers increased opportunities for securing the required adaptation of the plate and pins, and because of the nature and direction of the stress received by these teeth.

"Carmichael Attachment."

The so-called "Carmichael Attachment," which is similar, if not identical, in principle to the "staple crown," may often be successfully employed, particularly in making the attachment to the cuspids. It is also applicable to bicuspids and molars, and sometimes to the incisors when a shape obtains which is more or less favorable to their accurate adjustment.

While the employment of this or of a similar method involves a slightly more radical preparation of the natural crown than the former procedure, still this is often warrantable because of affording the increased degree of stability which is required by the location of these teeth, and by the nature and direction of the stress imposed upon them.

When the approximal walls have been properly paralleled, the grooves cut a sufficient depth, the adaptation made with accuracy, and a *uniform* reinforcement adequate to insure the desired degree of stability then obtained, this method of attachment, when employed in connection with the other requirements mentioned, will afford results of an artistic and usually permanent nature. It is presumed, however, that the method may not be generally employed because of being a patented process.

Open-face Crowns.

It would probably be almost impossible for one to deal with a consideration of the subject of attachments for fixed bridgework without making some reference to the application of the so-called open-faced crown. Whilst it is true that its application involves less preparation or mutilation of the

natural crown than any other, it is not always also true that this uninjured condition remains permanently so under such crowns.

At best they are inartistic to a high degree, because of the necessity for encircling the crown of the tooth supporting them, and yet if the esthetic or art side of the requirements may not be paramount to that of possible strength; if the tooth be properly prepared so as to admit of an accurate adjustment at the gum line, and if a crown be so adjusted and then adequately reinforced, they will support the lateral in a more or less permanent manner, when the precautions against rotation have been also observed.

In view of the above more decidedly esthetic methods, however, and because of the injury to gum and to tooth tissue surrounding and beneath them, their employment is only to be recommended in extreme cases at best, and perhaps even less often in the mouths of young patients.

Lingual Rests.

In calling particular attention to the necessity for overcoming the leverage produced by suspending one tooth from another in the direction in which stress is applied, and in so strongly recommending the almost universal need for the employment of a suitable rest for this purpose, even in the anterior part of the mouth, I am not unmindful of the possible criticism which may reasonably be made in regard to such a method of construction.

And yet you will doubtless agree with me in the correctness of the principle I have enunciated with regard to when and where one tooth may be expected to do the work of two, and also in the absolute necessity even under these conditions, for a mechanical means of overcoming leverage. Hence the practicability of a rest resolves itself into a consideration of the requirements of the same, from a practical and hygienic standpoint.

Their practicability or impracticability depends upon, *first,* an adjustment which will not interfere with the occlusion of the opposing teeth, or impinge upon the soft tissues; *second,* an adjustment which will be so free of contact as to maintain as nearly a self-cleansing space between it and the tooth and gum as possible; *third,* a minimum contact with the tooth at the desired point; and, *fourth,* sufficient rigidity to withstand the stress imposed.

If these requirements are observed, such a rest need not afford much, if any, opportunity for the occurrence of caries at its point of contact; need not be appreciably unhygienic, nor even an impediment to speech nor to the movements of the tongue.

Supplying Bicuspids and Molars.

If the problem under discussion is to be regarded as being a difficult or perplexing one, as applied to the anterior teeth, it is even more so in its

application to the posterior teeth, for while the esthetic requirements may not be so great, the mechanical are even greater.

For this reason, and in line with the principles formerly mentioned, the only space posterior to the cuspids where the missing tooth may be suspended without some secure means of attachment *at each end* is the first bicuspid.

This particular tooth may usually be suspended from the second bicuspid if a rest against the cuspid is provided, and the strength and permanency of such a procedure may be increased by having no definite occlusal surface to the suspended tooth. This latter is ordinarily permissible, because, as a rule, such teeth do but little, if any, actual masticatory work.

If for any reason, or because of more favorable indications, however, the attachment of these teeth should be made to the cuspid, some secure means of additional attachment must be made on the second bicuspid, in order to overcome the combined and increased influences of both *direct* and *lateral* stress.

In supplying bicuspids and molars, two general methods of attachment may be employed: Full crowns and partial crowns, used either in combination with each other, or in conjunction with a more simple, and yet adequate, *rest* at one end.

Partial Crowns.

When the principal attachment may be made to the bicuspid teeth, the employment of a partial crown which will not necessitate an extensive mutilation of the natural one is, of course, always preferable.

A form of partial crown, similar to the so-called "Carmichael attachment," may often be successfully employed by simply paralleling the approximal surfaces and grinding down the lingual cusp, thus forming a solid seat or base for the attachment, and admitting of the restoration of the cusp with gold in a manner which may possess adequate strength and yet not be conspicuously objectionable.

While this method is also applicable to molar teeth, it is more particularly so to the bicuspids, because the same opportunity for securing adaptation is not usually afforded in its adjustment to molars.

Another form of partial crown which may be sometimes indicated and successfully employed on bicuspids, and particularly those of the lower denture, involves covering only the occlusal surface to an extent which would insure adaptation and integrity in the attachment.

In constructing such an attachment, however, accommodation for the occlusion must first be made, and while the buccal surface of the crown may then be trimmed away until it is not objectionably conspicuous, the lingual surface should extend down as far as the bulbous portion will

admit of adaptation, and the approximal surfaces of the crown should extend below the point of contact with adjacent teeth—both natural and artificial—in order that the marginal edges may receive the immunity from the lodgment of accumulations which is afforded by the interproximal space.

Full Crowns. When applied to the molar teeth, there is no form of attachment which offers the same opportunities for successful usefulness and permanency as does the full gold crown, and hence wherever it may be indicated and employed, the best possible results will usually obtain in every respect, excepting, perhaps, that of cosmetics.

As applied to teeth in the mouths of patients of tender years, however, I am of the opinion that such crowns should never be allowed to encroach upon the gum tissue, and that no effort should be made to pass the band beneath or within the free margin of the tissue, thus encompassing the entire natural crown, unless the age and indications may warrant the devitalization of the pulp, and thus admit of a degree of mechanical preparation which will in turn admit of an accurate adaptation at this point.

If the condition of the tooth or the age of the patient contraindicates this procedure, I believe that a more permanent operation, and a more perfect result, will obtain by allowing the neck of the tooth to remain exposed which will in no manner interfere with the usefulness of the artificial crown, if it be properly adapted. By this means the adaptation will be facilitated; injury or irritation to the tissue will be avoided, and normal conditions will remain.

Occlusal Rests. In supplying one or even two missing teeth, any one of these preceding methods of attachment, made in accordance with the prescribed or required indications will often afford adequate anchorage for one end, if the other end is then properly supported.

While in some instances it may be possible and even preferable to employ some one of these attachments *on each end,* yet there are many instances where a simple *occlusal rest* upon one end, or the other, in combination with such an attachment, will afford all the support which the requirements demand.

This may be accomplished in a manner which will require but little destruction or mutilation of the natural crown; which will offer adequate resistance to lateral or direct stress, and which will yet afford an esthetic effect, by making or utilizing a cavity in the approximo-occlusal surface of such natural crowns, filling and finishing it in a permanent manner, and then cutting a seat in the filling which will accommodate the projecting end of a heavy bar from the bridge.

If this projecting end should be of a square iridio-platinum wire of proper gauge, and the seat in the filling so made as *not to involve any of the margins* and of a shape which will admit the projecting end to rest firmly and snugly in position in it, no effort need be made to attach it more securely. Indeed, if the projection fits into the filling and rests more or less firmly therein, the slight mobility thus afforded is in many instances an appreciable advantage, and offers greater opportunities for permanency than if it were securely anchored in the filling.

While the possibilities of such a support are sufficient to often warrant the cutting of cavities in sound teeth, the method is particularly applicable when a cavity already presents.

In conclusion I desire to state that the methods which have been herewith reviewed and considered are those which are exclusively applicable to fixed or stationary operations, which class of procedure I believe offer the most favorable opportunities for success and permanency, whenever the pernicious practice of simple bands is avoided, in supplying missing teeth as applied to orthodontia.

Discussion on Dr. Goslee's Paper.

Dr. Edward H. Angle, St. Louis, Mo.

Those of us who give all of our time to the practice of orthodontia know full well that the subject of missing teeth is a very important one, and I am sure it is one that will grow in importance as orthodontia grows, for it is one of the natural difficulties to be overcome in orthodontia, and will be, just so long as ignorant or unscrupulous dentists are given the charge of these priceless organs, and just so long as carelessness on the part of the patients results in the inevitable loss of their teeth.

To the ignorant a tooth is "only a tooth"—only a unit in thirty-two, and something which if it gives offense should be "plucked out." But to the orthodontist its great value becomes apparent and its loss the occasion of our most difficult problems, for it is not only its individual loss, but its relation to all other teeth, not alone in its own arch, but in both arches, that we have to consider. It is of more importance than is the keystone in masonry, not only on account of its maintaining the size of

the arch, but also on account of its maintaining that delicate harmony of the entire series of inclined planes of the dental apparatus.

Given a case in orthodontia with the full complement of teeth even though in quite pronounced malocclusion, and the prognosis becomes easy and the plan of treatment simple and now well understood, for we now know that the full complement of teeth is highly essential to the normal contour and most artistic outlines of the face. But when a tooth is missing, the entire balance and harmony both in the art relations and in occlusion are seriously disturbed, and the problem of how best to restore this tooth becomes a really serious problem.

If we dealt only with people in middle or advanced ages of life then the mere improvement of the occlusion by adjusting the teeth that remained might answer, but we must remember that our patients are usually those of eight, ten, or twelve years of age, and that every effort of culture, refinement and beauty is being put forth in their behalf, and it becomes our duty not to temporize but to do that which is in nearest accord with the ideal in Nature's demands; hence the missing teeth must be restored. It is not optional; it is imperative. If the spaces for these missing teeth be closed, either partially or fully, these spaces must be regained and the teeth replaced. Now to replace these without injury to the natural teeth, and so that they will fulfil their difficult duties throughout a long life is a question most perplexing, and for this reason I am very glad that this Society has secured such masters of this branch of dental science to enlighten us on this very important and extremely difficult problem, for difficult I am more and more convinced that it is. But I must confess to you that these papers have conveyed to me a feeling of sadness—not that they are defective in their composition, nor that the principles they advocate are not the best, but still I am impressed with how far short of the natural priceless organs the substitutes fall, at best. I cannot discuss their relative values, for it is out of my line. This is a specialty in itself and one that the orthodontist cannot practice successfully and should never attempt. It only proves the necessity for specialization and of referring our patients who need their services to these masters. But more than all, I am profoundly impressed with the importance of guarding with jealous care each tooth, that it shall not be sacrificed.

When men shall know occlusion then they will be so impressed with the importance of each tooth that it will be regarded, as it should be, as a punishable crime to carelessly sacrifice them, and they will also know that if they must be lost through the carelessness of the patient that this does not end it—that they must be replaced unless the entire dental apparatus is to be seriously impaired.

Dr. Geo. H. Wilson, Cleveland, O.

It has been a source of great pleasure to me to have had the privilege of hearing such a very valuable paper, and I am proud also that I am a prosthodontist, a fellow craftsman of the essayist's. It is evident that man has degenerated to such a degree that mortal man has to repair what the Creator is supposed to have done perfectly. But as that is our mission we must answer the call to the best of our ability. How that is to be done is the question we must solve. I believe that the method that has been depicted here today is the best in childhood that can be improvised. What is to be done after the child has reached maturity is another matter. In the early part of this work the crown and bridge method is the only one on which we should depend, although this attachment can last but a few years before the teeth are in a more fixed condition, the parts have developed and the patient is old enough to use an artificial appliance with judgment. Then I believe that a plate is preferable to a continuance of the bridge work, extending the attachments still further than we did originally. Therefore I believe that that is the best solution we have at the present time, and I desire to specially compliment the author on his valuable production.

Dr. R. Ottolengui, New York City.

It seems to me that Dr. Goslee has addressed us as orthodontists almost solely in his title. He has brought to us admirable methods which are not, however, applicable to our work as we meet it. The point is this: We are told how to replace a missing first permanent molar. One method is to make use of the second permanent molar as an abutment. But that is not always possible; often the second permanent molar is not fully erupted until after the orthodontist's work is finished; consequently that process is not applicable to so young a child. Again, we are told how to supply a missing lateral incisor. In the orthodontist's practice lateral incisors usually are not missing as the result of extraction nor lost through disease. We meet that in adult life and we may then restore them according to the methods described. Usually when the lateral incisor is missing in a child it is due to lack of germ development. The case may come to us before the cuspids have erupted. The cuspid is often the last tooth to erupt during the time when the orthodontist is at work; consequently the cuspid cannot be used as an abutment when we are dealing with a young patient.

It seems to me that in a young mouth all the modes of treatment advised are wrong because they are all fixed bridges, whereas, something removable would be cleaner, more hygienic and less likely to cause injury to the adjacent teeth. There are, perhaps, no real good methods available for the restoration of missing teeth in children's mouths. The work is

admirable as related to the adult mouth, but apparently it is not widely applicable in the mouths of young people.

I disagree with Dr. Goslee relative to the Carmichael method. I cannot believe that with any other method at our command, it is excusable to cut grooves in a healthy tooth. In all the methods where cavities are to be cut for rests and attachments, remember that we are dealing with teeth too young to permit of any extensive cutting on account of the size of the pulps during adolescence.

Dr. Goslee has brought us an admirable paper and has attempted to bridge the chasm between the orthodontist and the prosthodontist, but he has not quite done so.

Dr. U. E. Barnes, Cleveland, O.

I have listened to this excellent paper and its discussion with much pleasure. Dr. Ottolengui has touched on some very vital points. Personally, I feel that it is wrong to put bridges on young patients, particularly those under sixteen years old, and in most cases that is far too young. The pulp cavity is as yet imperfectly developed, and if we attach bridges to such teeth, we have thermal changes and induced conditions that are not normal. We should wait until the patient is older; until the teeth reach full development and when the artificial conditions will not affect tooth structure so much as they do in these young patients. When we get through with our little patients of nine or ten or under, we should put in a temporary retaining appliance such as bands and wires or a little plate; or first the former and then the latter and later on the bridge. In this way we may be able to stave off the loss of teeth that must come later on.

The Doctor uses the word "permanent" in regard to these bridges. I believe that is a misnomer, because fifteen years is really a very long average for the life of a bridge. Will the Doctor tell us at what age he would put on these bridges, for he did not touch on that point in the paper, and to us it is a vital one.

Suppose such a case as I have encountered: a girl of twelve years, having all four laterals missing (X-ray shows no germs present), and the bone formation is such that no sightly closing up of the space can be accomplished. The insertion of artificial teeth seems essential and yet you certainly would not think of putting in a so-called permanent bridge at that age.

I cannot agree with the criticism on the Carmichael bridge. It seems to me that a tooth with the least amount of metallic covering has the greatest opportunity for long life, and that is where the Carmichael bridge is of advantage. I believe that it is a good thing when it is made properly. It is much better than the band or the shell crown.

Then there is the question of movable or fixed bridges. It would seem that, since a tooth in normal position is in a movable socket, our restorations should be along that line and not rigid. Many bridges are lost on account of rigidity. If we have the flexibility that the essayist speaks of we have something to be commended. There is urgent need of something far better than what we have at the present time. It is hard to have to use artificial substitutes, knowing that they are an evil; even that they are a lesser evil, still the best is none too good.

Dr. A. E. Webster, Toronto, Can.

One feature of this subject has not been touched upon, and that is those peculiar cases, for instance, where the first molar has been extracted and the second tipped forward in a patient of thirteen or fourteen. The incisors and bicuspids have been retruded and space must be made. To make any appliance that would be permanent would be a questionable procedure. It is doubtful whether it is to be permanent or not and yet any removable appliance is wholly useless in most of these cases. Can you depend upon a child of fourteen or fifteen to wear a removable appliance? It will be put in and out and forgotten and lost, and in three months or more they come back saying that the appliance was lost months ago, and on examination you find that the conditions are the same as they were when you began to treat the case. In a child of that age a temporary retaining appliance is to be preferred. Even if the second molar is to be crowned and the second bicuspid also, I should not advise crowning nor that the band reaches to the gum line. But some appliance ought to be devised that will be a fixture and that cannot be removed, and which yet does not mutilate the teeth.

It has been suggested that after twenty a bridge or other artificial denture may be supplied, but at that time it is impossible to use a removal appliance.

Dr. Goslee.

I am exceedingly pleased with the reception of my paper, but, with Dr. Angle and others, I confess that I too am disappointed in it. I see now that the subject might have been treated to much better advantage in so far as this particular Society is concerned. It should better have been considered under two heads; one involving the procedures indicated under the age, say of fourteen, and the other involving procedures indicated in the mouths of patients above that age.

In justice to my paper, however, and to the methods which were presented, I wish to say that every one mentioned is particularly applicable to the latter class of patients. Indeed in rare instances only would I think myself justified in adopting any of these methods in the case of patients under fourteen years of age. Had I treated the subject from

that particular standpoint I believe I should have said just exactly what I did say with regard to one class, and about this with regard to the other class: In supplying missing teeth in the mouths of patients under fourteen years of age I would attach them in the most simple manner possible, and with the view only of supplying something to retain the space until a method may be utilized which will offer a more favorable degree of permanency and usefulness.

I regret that I did not present this subject to you as I can now see how it should have been presented; but, after all, I would proceed along the line of the methods indicated in the mouths of all patients where I felt that more or less permanent results were expected and desirable. In the mouths of patients under fourteen years of age, where such procedures would be impossible, I would make an effort to maintain the condition until such time as these procedures, or similar ones, would be indicated and applicable. I want to thank you very much for the courtesy you have extended to me.

SOCIETY PAPERS

An Ideal in Pathology.

By Dr. D. R. STUBBLEFIELD.

Read before the Institute of Dental Pedagogics, at Buffalo, December, 1903.

Teachers in dental schools are not supposed to deal much with ideals. This is mostly due to the fact that the dominant idea with the average dental student is to learn to *do* something. It is very easy to get his attention when there is "something doing," for his very fingers itch to get into the actual work. He is only happy and contented when he is blundering along in some attempt to do what he has seen done, or only heard of, without a clear mind-picture of the end aimed at. He may succeed by dint of luck or happy accident, but skill is only attained by him who first gets a clearly defined mind-picture and from that ideal works to a certain end. In other words, ideals must exist before definite results can be expected, whether in one or another field of human enterprise. Therefore, we would enter here a plea for better, clearer, more definite ideals as the best, even the most necessary foundation for all our work. We do not think this end can be attained by a happy-go-lucky, slipshod method, but it should be the intelligent aim of the teacher to get himself so saturated with the highest conception of his work that he will not be able to express himself without voicing his ideal to his classes. Set on fire by this ideal, he becomes the ideal teacher. All the world's great reformers have been ablaze with an ideal which could not be shut up within them, even if they were to be martyred for the utterance. They were the men with messages to deliver and they left an ineradicable impression upon their day and generation. While this is true the world is not altogether pleased with the idealist, or, as they say it, a "dreamer of dreams." He is looked upon as unsafe, as one who dreams while others work to do things. And

there is some show of reason for this, because all ideals are not necessarily correct any more than all ideas are, and also because all minds do not form correct conclusions though they make mental pictures. We would make no claim that mind pictures are any more perfect of necessity than the material pictures from the artist's brush, but we claim that the first and only correct basis for a practical affair is a perfect ideal standing out clearly in the mind before the first step is made in its practical achievement. Sir Christopher Wren and all other great architects built in mind their great cathedrals before the foundations were begun. And so it must ever be, as will be seen upon reflection.

The ideal which we shall try to place before you is undoubtedly open to all the limitations indicated above, but the principle enunciated we claim to be almost if not quite axiomatic. Our ideal is only the result of an effort to get a simple view of the subject which we might hope to impress upon the students more easily. It is presented more with the hope of obtaining the benefit of discussion than any flattering unction that we are showing something new to this august body.

Pathology. Pathology, simply stated, is only a discussion of disease. Some impairment or interference with the nutrition of a tissue or an organ has been produced and the effect is discussed from all sides. Some effects are open, easy to read, and their causes are equally easy to see and understand; but others are obscure and indefinite both as to nature and results, as well as causation. Along this line we must all feel that much remains to be done, for we may not rest securely in the knowledge of the present. The philanthropic workers in the laboratories and in the wide field of the world must be content largely in the consciousness of having benefited their fellows, which is the only capital that can be realized upon in the hereafter, as we are credibly informed.

These interferences with the normal may differ very naturally as their causes differ, arising severally as they do from (a) Malnutrition, (b) Unsanitary Surroundings and (c) Outside Interferences. Another cause for variation is the difference of structure in which the cause is at work, rendering all efforts at definite symptomatology almost futile. Indeed, all the thousand differentiations in nature, as age, sex, climate and so forth, add their assistance to those above to make confusion worse confounded for the diagnostician. To get some simple yet comprehensive grasp upon this complex condition is the object of this discussion. So long has this subject of pathology been under the ban of general ignorance that the idea has almost been accepted that it can not be understood by any except those who give themselves wholly to it. The student mind seems to get this popular prejudice first of all and they assume a mental attitude of

helplessness toward it. This is not as it should be, for there is no "ology" so abstruse that its essentials can not be rendered plain if we go about it in a plain, common sense way. At the same time we confess very freely that it was not long ago when it seemed impossible to get such a grasp on this subject which had not been thus simply impressed upon us, and it seemed almost unthinkable to get on intimate terms with it. An old friend used to say that when he was growing up they studied at college "Losophy, Gosophy and Phleanikislunk and nothing else, which put the college men above and beyond ordinary mortals." This always comes to mind when we find this idea of pathology being beyond the ordinary man still alive though possibly unacknowledged as such. But it can be understood if we take its simplest, initial principle away from its usual setting and digest it.

Inflammation

Let us say that every disease from whatever cause is an inflammation. An inflammation, according to the books, is interference or disturbance of the nutrition of a tissue or organ, characterized primarily by hyperæmia and accompanied by certain definite symptoms. In a word, it is just about what we gave as the definition of pathology, except that pathology is a discussion of the series of manifestations following upon an exciting cause. Pathology, then, for our use is only a *discussion of inflammation.* In this we find and present you our ideal in pathology.

To go one step further, according to the texts, the cardinal symptoms of inflammation are: "Redness, heat, swelling, pain and perverted function or febrile condition." These are the typical manifestations of the results or changes going on, which to be equally discernable must have an equally favorable locality to show themselves. Such a condition is rarely if ever found. We may have one or more present but from the nature of the case there can not be the same proportionate degree in all. Hard structure, as bone, will not exhibit redness or swelling; deep seated inflammations may be too far from the surface to show readily; and so on. But in all we find or have good reason to believe present, if not easily seen, disturbance of the circulation and perverted function in part or whole. Thus it is easy to establish the analogy between ordinary inflammation and any localized structural disturbance. This analogy is much more difficult to establish in the minds of the students when we take a more general systemic excitement as the illustration. This requires more mental effort, and mental effort they can not or will not make except after artful persuasion. Our eminent friend, Dr. E. C. Kirk, once said that the most insulting thing he could do was to compel his classes to think. Doubtless, all teachers agree more or less fully with that statement. A question that can be answered by rote is all right, but any turn or twist of an old,

familiar question that requires a little hard thinking raises a row. The very thing that education means, if it means anything, almost raises a mutiny, or, at the mildest, is an affront to their self-love. Yet to stimulate the growth of the mind, to accustom it to think should be the highest aim of every educator whether engaged in general or special work. Just here the inquiry comes to mind if that aim is not too often overlooked partly or entirely in our dental educational institutions.

To return to our subject. There can be no doubt that it is difficult to always clearly see the analogy between a localized inflammation, as a furuncle, say, and an idiopathic fever, but it is there nevertheless. We have only to think that the cause is acting more generally in the one case than in the other, and the results may be seen under the glass to be the same. We see the blood current accelerated in response to the excitant, the increase in speed and number of the leucocytes, the rise of temperature in both, the increase of size by this rushing of more blood to a special or general alarm, and a more or less decided perversion of function depending upon the extent or duration of the excitement. In both instances there develops an increasing exaltation of nerve susceptibility ending in pain if prolonged extremely. These general similarities must be considered broadly and the analogy must cease when the large lines of likeness are lost in the minutiæ of limited areas. Like the masterful sweep of the truly artistic brush, the minute is swallowed up in the salient forcefulness of the wide treatment and the discerning mind catches the idea and is satisfied. Students have not, as a rule, adequate discernment to hold a firm grasp upon the golden thread of the analogy, and once the end is lost they fail too often to catch it up again. Some of this uncertainty is doubtless due to the obscurity in the mind of the teacher. If the teacher is full of his ideal, he will very naturally recur again and again, like a spider weaving his web, so as to give his classes frequent opportunity to see it clearly and re-establish a strong connection with the central idea. It is our aim to present the broad principle of inflammation so simply that it not only can, but must be understood, never losing sight of it ourselves in any amplification. If the claim is made that it is too narrow, too much like the crudities of our earlier and less cultured years, we meet it by saying that teaching must be fitted to the taught without any reference to any preconceived ideas of fitness or technical fulness. One clear and definite idea is undoubtedly worth a multitude of vague and uncertain theories that can never be crystalized into sensible, practical cognitions. This applies to teacher and student alike. Therefore, if this simple, clear idea may be once established in the mind, there is something there that is his—something that he can digest and realize upon. He will soon be conscious of its simplicity doubtless, but from it as a basis he can surely reach out

to other things, certainly and logically deducted from that certain idea in his own mind. Without some such simple idea in mind he is never certain, and, like some wanderer in a bog, he goes falteringly from one uncertainty to another, fortunate if he succeeds in stumbling across, with no hope of return.

Oral Pathology.

Let us now give some more practical application of our ideal to our own special branch, oral pathology. Take stomatitis, an inflammation of the mucous membrane of the mouth, ranging from the simple gingivitis to the most serious involvement of that tissue from a destructive, specific inflammation. Here we have a wide reach of conditions, from the infinitesimal and simple to the largest possible surface and complex specific involvement. The causation may, in fact does, differ and may be the all-important task for the physician to undertake, but the symptoms are essentially alike, differing in degree rather than in kind. We have the capillary engorgement, sensitiveness to pressure, the solution of tissue where the inflammatory process has culminated in degeneration, the increase in size shown in the tumifaction—in a word, all the cardinal symptoms of inflammation open like a book.

Again, in the diseases of dentition. As you remember, the text-books divide them into two classes: the true and the so-called. In the true, where the tooth germ, like any other tissue or organ, suffers from a real interference with its nutrition, we apply the measure as set forth above and we find local tenderness, redness, heat, tumifaction—in a word, all the symptoms necessary to establish its identity as a true inflammation. In the other, the so-called, we may just as easily prove the absence of all those symptoms locally and may boldly assert that whatever it is or is not, it is not a disease of dentition. Boldly is used advisedly in this connection, for the physicians will not always sustain you in this assertion. They have been known to diagnose the effects of teething in children who had all twenty deciduous teeth in position, and it is a bold, not to say a rash, dentist to stand up for his convictions in the face of the irate family doctor. In the so-called diseases of dentition there is certainly some disturbance of the nutrition going on and, as we see it, Nature is engaged in a great effort to rid the system, especially the alimentary canal, of a less or greater mass of indigesta, if not indigestible substances. To call such efforts on the part of our inherent health principle a disease of dentition is just as sensible as to look upon dentition as essentially a pathological process with or without complications. There may be an interference with the process of dentition, attended by all or enough of the cardinal symptoms of inflammation to clearly show a case of inflammation, but with gums normal in color, no intolerance to touch and none of the local signs of that

process, it is wooden, to say the least, to acquiesce in such an idea. In the so-called disease there is certainly an error of nutrition, the digestive function is all upset, but there is no reason in the assumption that it is a disease of dentition because this disturbance happens about the time when certain teeth are due and may be erupting without any of the signs inflammation.

In like manner we might apply our ideal to every form of that protean process called inflammation. It is not necessary that we find the certain cause of any inflammatory condition, although that is the wisest and best when possible for us to recognize the more or less definite presence of some or all of the cardinal symptoms; but when we can get this simple cognition as the basis of all such conditions we can feel that we can get on much more intimate relations with them and the pathology of all their breed.

And this, gentlemen, is the object aimed at in our discussion to-day.

President's Address.

By J. H. Crossland, D.D.S., Montgomery. **Ala.**

Read before the Alabama State Dental Society.

Arising to offer you the annual address of the twenty-ninth convention of this society, looking upon the assembly to which it is to be presented, the sense of my inability to enlighten you comes heavily upon me; pride and embarrassment struggle for supremacy. Were my powers of expression commensurate with the ardor of my heart today, the eloquence of this effort would charm you as did Demosthenes the Athenians, and cancel the great debt of gratitude to you which this lofy privilege involves. The shallow furrow of an humble plowshare has turned in its majestic flow and shortened in its meandering course from tiny Itasca to the sea, the mighty Father of Waters. So may I hope that some simple idea herein expressed or implied may lead greater minds to traverse some unfrequented by-way of thought until it broadens into a spacious avenue of research, through which the endless train of investigative minds may pass in its course to the great highway which will lead to the goal of our common ambition. Our annual pilgrimage is made. We are assembled once more around the altar of progress, each cheerful with his offering and ardent with quickened inspiration. The philomathic and philanthropic

spirit is strong within us. Altruism throbs in every heart and irradiates in every countenance. Truly, the mind wanders to realms Utopian. Another "year has gone, and with it many a glorious throng of happy dreams. Its mark is on each brow, its shadow is on each heart." "Time, Time, the tomb builder, holds his fierce career, dark, stern, all pitiless, and pauses not" even to view the magic deeds of his twin brother, Evolution, whose resistless hand we seek to aid today. A custom, old as this honored institution, points to the bright chrysalis, fresh from his classic cocoon, as a fascinating object for the advisory of the annual address. Though this custom consigns this phase of the discourse to its closing lines, I know that all save the victims will pardon the liberal share of space here to be accorded it.

Perhaps the most active period of modern dentistry marks your advent into its faculty. "Improvement (is) the order of the age." In the beautiful economy of nature no allowance is made for inertia, and the human mind is no exception; progression or retrogression is inevitable.

Endeavor.

The sole requisite to progression is endeavor. A certain philosopher has said that man is by nature a social animal. Away back in the earliest existence of the human family, ere his faculty and genius had made him the superior in physical force to the predatory beasts of the field, the co-operation of his fellow savage was one of the necessities to his existence; and now, at the close of this brilliant nineteenth century, no human being is beyond the necessity of assistance from his fellow man. At an early period in the supremacy of Rome, deeply rooted in the great Roman mind was the beautiful creed that the State was one great family. The temple of Vesta, virgin goddess of domestic welfare, stood in the Forum. Virgin priestesses kept the fire on the altar ever burning, its extinction being looked upon as emblematic of the extinction of the State. At stated periods of each year the fire was renewed. In the heart of each of you who has lent a willing ear to the precepts of his *alma mater,* burns a fire of devotion to the profession of his choice all the brighter for its recent origin, which should be guarded as by vestal hands, for rugged and iconoclastic are the ways which lead to the citadel of your laudable ambition.

With pride and affection I commend to you the institution which it is my honor to represent today. Offspring of Fraternity, parent of Progress, mentor of Genius, crystallization of the beautiful idea of mutual assistance and professional reciprocation, its banner floats gracefully and proudly in the genial zephyrs of the springtime of dentistry, immaculate now as when unfurled more than a quarter of a century ago, by the fathers that are gone. The flower and the chivalry of dentistry of this and sister commonwealths surround it today. At stated periods we assemble to

renew the fire. Let your fellowship begin now, and let not its shrine be empty ever of your offering.

Now while the faculties are active yet docile; now is the time to begin the never ending structure upon the foundation which you have laid. "Procrastination is the thief of time." It is also the murderer of Hope, the assassin of Ambition, the destroyer of pride. "Remorseless time, fierce spirit of the glass and scythe! what power can slay him in his silent course, or melt his iron heart to pity? On, still on he passes, and forever." He "lays his pallid hand upon the strong man and the haughty form is fallen and the flashing eye is dim." He "lifts the coffin lid of hope, and joy, and love, and, bending mournfully above the pale sweet forms that slumber there, scatters dead flowers o'er what has pressed to nothingness."

As the fleeting years pass on to eternity, mind well the good resolves you have formed; for red avenues are paved with such in regions caloric.

The beautiful art and the dawning science of dentistry is no mean field for your talent. The knight and the soldier and the patriot and the statesman have not escaped the wild fancies of youth, and the shaft of stone and the figure of bronze are still silhouetted on the bright walls of memory. Assimilation is far reaching in its effects, and will glow in the cheek and sparkle in the eye of generations yet unborn; the stalwart form and the brilliant mind will speak eloquently of the conscientious deeds we have done. There is a talisman by which our noble young calling will yet pass to the high place to which its importance entitles it in the estimate of the public—the leaf of the papyrus. Cultivate it and foster its growth among us until those unfamiliar with its genus will view in awe and pass on to more congenial company. Intellectual culture without conscience can but produce a splendid deformity; æsthetic culture alone, fastidiousness and effeminacy, and physical culture alone, but a strong brute. But the blending of them all, the knightly knight, the manly man, the courtly gentleman. The spirited controversy between the Association of Faculties and the Association of Examiners indicates, unmistakably, the depths to which the vitally important question of preliminary educational requirement has stirred the profession, of late, and has held up to our gaze many glaring evils resultant from its neglect in the past. But, out of it all will come the higher standard, the more elaborate curriculum and the more cultured and intelligent practitioner. When you select the community to which your professional services are to be offered, and furnish and equip a place in which to do those brilliant and startling deeds which you have dreamed so sweetly, let its elegance and attractiveness be limited only by the extent of your exchequer; though Oriental splendor should characterize it, call it not a *dental parlor,* for such is not the proper appellation for the office of a professional gentleman, but savors all too

strongly of that monstrosity who styles himself a "strictly business" dentist. Leave him alone in his infamy, the ghost of his strangled conscience his Nemesis, and reck not but in pity of the misguided who seek the works of his vandal hand, lured, perhaps, by the glitter of the wages of professional sin. Better, far, that your skeleton should whiten at the gateway of professional life—that the star of hope should retire, Pleiad like, from the constellation of your vision.

A Plea for Professionalism.

As others have practiced before your debut was made, even conceived, specimens of their handiwork will, in the course of events, come under your observation. Let the spirit of liberality temper even the justness of your criticism, for, Time, haughty gauger, has set there his seal, which, as you will realize more and more as Experience, master pedagogue, sways his sombre scepter over your senses, is not identical with that which the bungler leaves upon his works. In the interpretation of laws framed by mortal man, men differ ever, and in the domain of nature's inexorable laws, how can we but differ?

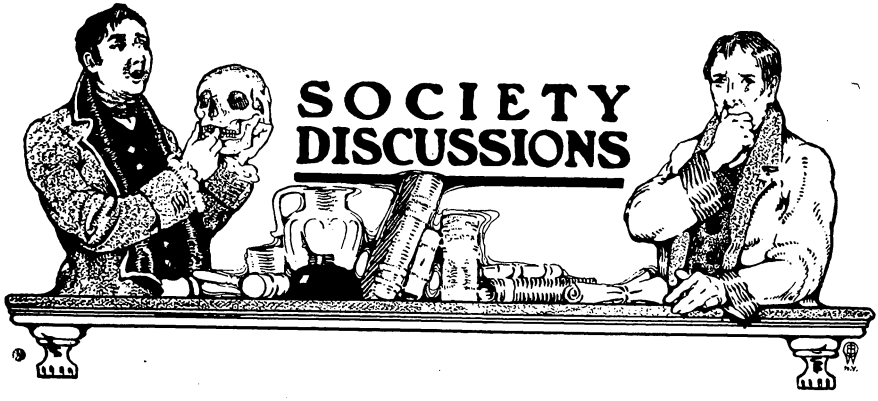
Young friends, thermal changes will produce their wonted effects, ptomaines form and the ghoulish microbe infest his charnel rendezvous, when the hand of Fate has rung down the curtain and our knells are on the world's selfish ear. The Romans bestowed upon the soldier who saved the life of a citizen in battle the civic crown. He who saves the life of a pearly sentinel, which an all wise hand has set to guard the portals of alimentation, places a crown in the shrine of his professional honor, burnished by self respect and studded with the richest jewels ever set by the hand of Justice. Your lots are cast among a people who, in refinement and chivalry and loftiness of character and bearing, are second to none, if indeed equaled by any, upon whom the sun has ever shone. Pre-eminently is it the field for the professional gentleman—the knightly knight, the manly man, the courtly gentleman. While "the spirit that buoys the brave" should be the elixir of your efforts, forget not, but cherish as you do your fondest hopes and brightest anticipations that glorious, beauteous gift, fraternity, which came as from angel hands to dentistry, struggling in the throes of selfishness, for when that sacred spirit dies within it, the searchlight of science will illumine no more its domains, and the of edentulous mouths become its funeral dirge.

Our annals have received no contributions of exceeding brilliancy since last we met; but the ship of progress has not cast anchor, but has sailed placidly on her endless voyage, scientific diagnosis her compass, accurate surgery her rudder, and, rational therapea, her headlight, undimmed by the effulgence of the sunset of this wizard nineteenth century.

It is recommended that Sec. 1, Article III, of our by-laws be can-

celed, as a State law covering the same ground renders it useless. Also that the resolution passed in 1893 authorizing our secretary to balance accounts with any one in arrears on payment of five ($5.00) dollars, be annulled, as it puts a premium on delinquency.

From several thoroughly reliable sources, including members of our Examining Board, come reports that, in some counties of the State, indictments against violators of the dental law can not be obtained; of which state of affairs I respectfully request your consideration.



Institute of Dental Pedagogics.

The Institute of Dental Pedagogics held its annual meeting at Buffalo beginning December 29, 1903. The programme listed a number of important papers and this attracted a large attendance. The president, Dr. J. D. Patterson, opened with an address entitled "Some Faults of the Prevailing Dental Training."*

Discussion.

Dr. Frank L. Platt, San Francisco, Cal.

I feel that all of us who are earnestly and honestly interested in dental education must commend the sentiments expressed in this able address, and I feel that the faults which have been enumerated are most critical and important to us today. It seemed to me that the essayist hit the nail on the head when he spoke of the better results which might be attained by demanding higher preliminary requirements rather than lengthening the course of study; also when he recommended that many students should be dismissed before finishing the course. These two items embody a great many of the faults of our present system of dental education. The fact he mentioned of insufficient fees being paid to employ able demonstrators is another fault; but how many colleges have the courage to take up the work and correct the faults to which the essayist has called attention? The dental profession is strong enough and big enough to stand for what we know is right and have the courage to put into operation. There must be a reform, and I believe even the requirements that

*Dr. Patterson's paper, together with the opening of the discussion, by Drs. Hofheinz and Hart, will be found in the February issue of ITEMS OF INTEREST, pages 91 to 103.

we have today are not being lived up to by some of the so-called leading colleges. I am from a city where we come in contact with a great many students from all over the country, and many of them appeal to me for advice. Within the last two years one young man, a graduate from one of the leading colleges, came to me with such a remark as this: "Doctor, if I had knew the conditions out here I would not have came." Do you mean to tell me that in such cases as this the colleges live up to the requirements which they are supposed to demand? I have watched that man. He is a clean, honest, bright, hard-working boy, and deserves a great deal of credit for what he has done, but he will never take tke place in dentistry which he might have taken had a good education been required of him before he entered college. I am lecturing to students today who are not what they should be along educational lines. I have in mind now one student who is deficient in this respect; and if he does not do better soon, I shall advise him before the end of the session to take up something else. He is a good, honest student, but he lacks manual dexterity and artistic sense, and seems to have no inventive genius at all. Such steps as this must be taken to stop the multiplication of glittering electric signs that we see on our streets. We will need to begin at the beginning and make students what they should be at the start. If we could demand at the outset a degree in arts or letters from a university and in addition to that a diploma from a school of manual training, we would have students who would amount to something when they get out of school. My own personal idea is that too many of the colleges are influenced in accepting students by the fact that they think they must live. Most dental colleges are private corporations whose faculties are paid by the fees of the students, and there is a strong tendency to accept students if they present reasonably good certificates, and hope that they will be an honor to the profession when they get through. If each dental college could be an integral part of a university with expenses paid, as are those of the other departments, then we could afford, and would afford, to reject students who are deficient along these lines. I have asked the deans of five of the leading colleges what percentage of the students in their schools would make successful dentists, and not one of them said over thirty-five per cent. That is nothing to be proud of, and I am not proud of such a condition. I feel that these questions are important and should be carefully considered by this body, and that every college represented should have the courage to put into effect the reforms which the essayist has mentioned.

Dr. Geo. E. Hunt, Indianapolis, Ind.

Dr. Patterson always has something to say, and when he says it we never are at a loss to know what he means. In this paper he has told us what he means in a very forcible and effective manner. But I do

not agree with him absolutely in all his statements. He divided the faults which he considered into faults fostering a low grade of professionalism and faults along the line of practical instruction.

Ethics. Under the first division he claims that the fact that students are accepted by our colleges with inferior preliminary requirements fosters the low grade of professionalism that exists in the dental profession. I doubt that. I do not believe that the preliminary education of the student has much to do with ethical practice. I think if it is in a man to be a blackguard he will be one, no matter whether he be a college graduate or not. His preliminary educational requirements will not influence him in that respect. On the contrary, if a man is going to be a blackguard in his practice, he is more likely to be a dangerous one if he has had the advantage of college education and the training that goes with it than the man who has not enjoyed those advantages. I think that those matters rest with the individual. A person possessing very inferior preliminary educational requirements may make a very fine man ethically; that is, leaving aside everything except his professional relations with his fellow man.

The Count System. In the matter of the count system I agree with the essayist. The count system should be adopted by us. If a man gets his points legitimately, they are his; they cannot be taken away from him, and he is entitled to his time credits for them. As our rules are today, the man who comes within a week or two of graduating from the best medical college in the country is compelled to enter the freshman year in our dental schools and receive credit only for the actual work done. He does not receive any time credit for the years spent in the medical school. If he enters our institutions with the necessary information in histology, physiology, anatomy and chemistry, we may say to him that he is excused from taking these subjects. Then he says, "What will I do in the time that my fellow students, who have not had the advantages that I enjoyed, are getting this information." And we tell him to twiddle his thumbs. Under the count system we could give him the credits to which he is entitled.

Discouraging Students. With regard to telling a student to quit the study of dentistry if he does not develop well during his first year at school: Theoretically that seems to be a reasonable proposition, but practically it sometimes would work a great hardship on the student. That statement by the essayist has been concurred in by everyone who has spoken previously, but I do not agree with it *in toto*. Our freshman students frequently come to us after having been out of student life for several years. They have lost the habits of study to some extent and these must be acquired

once more. My experience during thirteen years of teaching has been that men who do not do well in their theoretical work during the first year frequently do very well in the second and third years, after having again acquired the habits of study lost from disuse. You all can recall men who did not exhibit much mechanical ability in the first few months of their college career, but who by persistence and industry acquired a considerable degree of skill. They often turn out to be better men than those who promised well during the first few months.

Of course, there are men so extremely deficient in manipulative ability and in gray matter that they should not attend school after their first year. Those men could be eliminated with advantage to themselves, to the college and to the profession.

The essayist gives the remedy for the lack of uniformity between lecturers and demonstrators. If these two gentlemen will meet and discuss matters, there will be no trouble about uniformity. Or, better still, the lecturer on operative and prosthetic dentistry ought to spend a certain amount of time in the infirmary in actual contact with the students while they are at this work.

I am not at all pessimistic about these faults being corrected. I think they will be.

Dr. S. H. Guilford, Philadelphia, Pa.

In regard to the qualifications of students: I do not know whether the laws with reference to the preliminary education are carried out faithfully in all the States, but I know that they are in Pennsylvania, and I presume they are in Missouri. We have adopted the plan of the State of Missouri, which requires that all preliminary qualifications shall be passed upon by a State official, so that under these circumstances there can be no question as to whether the student who enters the dental college possesses the proper qualifications. I do not see why all the colleges do not carry out this plan inasmuch as it was adopted by the faculties association. If the rule is not being adhered to in any State, the matter should be looked into and changed. When a student has once passed the examinations conducted by a State official, there can be no question in regard to his fitness to enter upon the study of dentistry.

Classification of Students.

In our dental colleges we have three classes of students: First, those who have had a very liberal education; they have fine minds and are good students, but are lacking somewhat in mechanical ability. The second class is composed of men who, perhaps, have superior mechanical ability or manual dexterity, but who are lacking in general education. Then we have the third class, the smallest of all, composed of those students who have had a liberal education and at the same time possess very

decided mechanical ability. We meet this latter class occasionally, but not so often as we should like.

The question is, What are we to do with these men? It is very hard to take a man with a good general education but lacking in manual dexterity and turn him out, because those men sometimes develop very nicely afterwards. It is almost impossible to determine during the first two months whether a man will develop any manual dexterity.

Then there are those men who are skilful with their hands and who will make good operators, but are somewhat lacking in general education. What are we to do with them? They are men who will become excellent dentists, and although they may not be shining lights, they will serve the community well.

While it is desirable to have the best class of men enter dentistry, men who are well educated and who have the mechanical ability, we know that we cannot have all of our students in that class, nor even as many as we should like. Under these circumstances it seems to me that we ought to be a little lenient with the men who have practical ability but lack the higher education. By higher education I mean going through high school and college. These men often spell incorrectly and sometimes make lapses in their expressions. They annoy us, yet we feel sorry for them; but if they serve the community well, is not that the first essential? We are not aiming to turn out polished gentlemen, but men who will serve the public acceptably in their line of work. It seems to me that we should encourage these men in every way possible and see to it that they are turned out as good workmen as possible.

Fees.

Another point is the question of fees. Every dental college or any other institution must have the wherewithal to conduct its business. In other words, no college can be managed without money, and the income of the college must be sufficient to pay its running expenses. Of late years we have been increasing certain parts of our curriculum. We have been adding laboratories, broadening out in various ways, increasing our expenses enormously, but at the same time we have been receiving the same fees that we have had for the last twenty-five years. It would seem that the time has come for us to make a change. If we want to continue giving good service, we must have more money. This is not a commercial matter in any sense, but a question of finance. There is no reason why we should be expected to broaden and increase our facilities for the acquisition of knowledge unless we get better paid for it. This is a question that must be met.

As the essayist said, one of our greatest difficulties is to provide suitable men for teaching; not, perhaps, as professors, but as demonstrators.

Any one who has been at the head of an institution for any length of time knows that it is difficult to obtain competent men to fill positions in the laboratories and in the infirmary. We must get experienced men, and they expect to be paid good salaries. In our school we may not have as good demonstrators as we should like to have, but we have the best we can get, and we have to pay them well for their services; and, more than that, we have to pay them more every year. Therefore, our expenses are increasing although our fees have not been advanced. It is not so much a question of lengthening the college courses as of extending them and making them more serviceable, and we can do that only by getting the best of help and plenty of it. The only way in which this can be done is by increasing our fees for tuition.

Dr. W. T. Reeves, Chicago, Ill.

There are many features of the address that I heartily endorse. I do not remember that one aspect of preliminary requirements ever was brought up before, yet it is one that is of great importance, and I speak now so that others may express their opinions in this matter. There ought to be a minimum age limit. It seems to me that many students enter college too young; they are too immature to enter on their life's work. Students who enter college after having completed a high school course and after having had a few years of a business training are more settled in their ways; they know what they are doing and they appreciate more the advantages that the college offers them. When they graduate from college they will be better dentists and will be more successful men in their profession.

Dr. Edward C. Kirk, Philadelphia, Pa.

I have listened with a great deal of interest to the address of our president and also to the words that have been spoken by the several gentlemen who have participated in the discussion. On the whole I agree with all that has been said, but I want to emphasize two points so that we shall not forget them. I was interested particularly in the remarks of Dr. Platt with reference to the faulty English of one of our good schools. I have given this matter a great deal of thought recently, and I believe that the fault lies in the school preparatory system. I think they are defective in their teaching of English. It has been my experience that the men who come to us from abroad know their mother tongue more intimately than do the men of the same educational grade in this country.

Lack of Knowledge of the English Language.

I have taken up this subject with the department of public education in Pennsylvania after having observed the educational training in New York, New Jersey and the New England States. Those of you who can look back to the same period of school

training to which I belong will remember that we were given a text-book on etymology, a sort of substitute for Latin. That etymology considered so much of Latin as was applicable directly to the English tongue. It did not give us a competent knowledge of Latin, but it gave us the root words and all the English words derived from those roots, so that we got a fair knowledge of the relation between Latin and English. We obtained by that method a more intimate knowledge of English than do our students of the present under the new system which has substituted a meager course in Latin for the old etymology. The students now get a year or two of systematic Latin, but it has been found by practical experience that that much Latin is insufficient to throw much light upon English; not as much as did the old-time etymology. The present method of preparatory teaching is faulty in that regard.

In the collegiate department of the University of Pennsylvania a man today passes an entrance examination the basis of which, I think you will all agree, is not easy. It is beyond the ordinary standard of high school graduation. In the chemical laboratory of the department of arts a man was given some experiments to carry out by himself. He halted in his work, and the demonstrator seeing him looking over the bottles on the rack asked him what was the matter. The student told him that he could not perform a certain experiment. The directions for experiment were about as follows: "Take mercuric oxide and some other substance; agitate and note the result." And the man looking among the bottles said that he could not find any "agitate." If that had happened in the department of dentistry it would have been taken as an evidence of the low grade of material that had been accepted.

The specimens of English that I secured from the New York, New Jersey and Pennsylvania preparatory schools were often abominable. It is heartrending to have to stand up in front of such men and see how little they know of their mother tongue. But the faults in English are not to be taken as representing a low grade of culture all around, not a lack of early training, because a student knows other things that are, in a measure, an offset to his faulty knowledge of English. We need a better training in English. Any man who does not know a foreign tongue does not know his own.

Another illustration: One of the professors was lecturing to his class in biology. He drew a distinction between the meaning of food as ingested and as applied by the cell. He gave the Latin derivation of ingesta, and then he referred to egesta, and there was not a man in the class who was able to tell him what that meant. If that man had studied etymology and knew something about prefixes he would have been able to frame his own

definition of the meaning of egesta as soon as he heard the word.

Lengthening the Curriculum.

Another feature of the paper that has been alluded to is the question of broadening and lengthening the curriculum. It all hinges about the position of my colleague, Dr. Darby, who said that we made better dentists then than now. To make a dentist we must have not only the manipulative skill and ability, but we must also have a certain training in the scientific foundation of dentistry. We have added to the course chemistry, pathology, bacteriology, physiology, anatomy, etc. Do we need those or not? Is that part of the equipment of the dentist? If we do not mean that, let us all be honest and drop them from our curriculum. Let us also drop our dental degree and call ourselves master of mechanics, not doctors of dental surgery. Do we mean that those studies shall be a part of the working equipment of the professional man? Must he have them? I think he must. But in the effort to adjust these two things possibly the manipulative side has suffered. Yet, under present conditions, one or the other must suffer. If we give more attention, more time, to the manipulative side and do all we ought to do, then we are sending out men who have only a smattering of the theoretical subjects. We are giving our men about the same work in these subjects that the average college graduates gets in Latin or any foreign tongue. He may be able to read easy prose, but it is as much as he can do to order a meal; it is beyond him to converse in the foreign tongue.

Now, how many men in dentistry today are eminent for their knowledge of chemistry? I think you would stop at half a dozen. How many great pathologists have we? What has been done to settle the pathology of pyorrhœa alveolaris? This is before us all the time, and if we had more men properly trained in pathology those things would be settled; and so it is with many other things.

As to the question of professional status: Is there any other basis on which we can proceed? Is there any other thing that will give us professional status except the professional education of this craft? The profession must recognize that principle. It is not so much a question of addition of new studies as it is of better training in the old studies. If you can make a good dental practitioner in less time than it takes to make a master plumber, why do it, but I think that if we want to get professionally trained men we must do better.

Fees.

Now, as to the financial side of this question. I agree with the proposition that we should be well paid for our services. I have always been in sympathy with the position of the Widow Bedotte, who said that "The barber was worthy of his hair." In order to manage a dental college or any edu-

cational institution properly we must have money. It has been said that one way to do this is to raise the fee. I do not believe that that is the best way. There is another way, and that is to cut down the dividends accruing to the people who divide the surplus. My mind reverts to the possibility that our sympathy with this lame student who has been mentioned, the man who gives us little promise of success and much of failure, would be less if he were not worth one hundred dollars each year. If our fees were raised we would, perhaps, be still more sympathetic toward him.

There is one other matter upon which I would like to hear some expression of opinion. I am utterly unable to understand the position our president has taken with reference to one thing, that is his somewhat pessimistic view with reference to any of these reforms taking place through the Faculties Association, and his hope that they may take place through this Institute. It is strange there should be such different 'twixt tweedledum and tweedledee. If this is not the Faculties' Association, what is it? We represent the educational interests of this country, and we are the ones who must take hold of these problems and solve them for the profession.

Dr. B. J. Cigrand, Chicago, Ill.

I enjoyed this address very much and for two reasons: First, because the author dealt with the subject in a fearless manner; and, secondly, it was a criticism rather than a question of fault finding. A criticism, when properly directed, is always a benefit, and we ought to take advantage of the situation, especially because this criticism comes from our president, a man of experience, who realizes fully what is needed most and what will do good. I desire to call attention to the fact that I believe it is universal throughout all educational institutions of this country that more attention is being given to manual work. The States of Illinois, Wisconsin and Massachusetts are cutting down the theoretical work in the public schools and are giving more attention to manual training. If we will take the cue from this and cut down on the theory, incorporating this in our curriculum, we will get better results. At present we are devoting too much time to the cut-and-dried theoretical subjects, when we ought to be giving more time to the subjects that beget dexterity. We have hitched more to our courses than we can handle; and if Dr. Darby's statement made a year ago at the Chicago meeting is correct, that better dentists were made years ago than now, it is because of the fact that we had less studies then and the students were kept in closer contact with dentistry. They received better dental training. They spent most of their time in the laboratories. Today, on the other hand, very little time is given to the laboratories. I have looked into that question and I believe I am correct when I say that proportionately we are giving less time to our laboratories today than we did five or six years ago.

Preliminary Education.

As regards preliminary education: I believe we ought to have a course of probation of one year; not enter the student into the course at all, but enter him into a probationary course; and if he does not develop along the line of manual training, if he does not show that he possesses digital dexterity, tell him that he ought not to continue with the work. I have stopped a few students myself, and I have advised them to go into law or into the ministry. One man has done very well in the law, whereas he would never have made a good dentist. They do not need any digital dexterity in law, and consequently they make a success of it. In dentistry you must have mechanical ingenuity or you cannot get along.

Ralph Waldo Emerson was an excellent poet. He says he would have been a positive failure as a carpenter because he was unable to shingle a roof without splitting seven shingles out of every ten. He realized his deficiencies. That is what we must realize. When a boy cannot do with his fingers what his mind dictates, he is a failure. Old Lavater told us years ago that a man can be anything that his mind desires. But Ruskin said that mind can never do what fingers will not do. Many of us may have the desire to be pianists or harpists, yet how few could really gratify that desire or carry it out?

The Music School of Munich will take in a man prepared to come into the school, but put him on probation for one year. He is not recognized as a student in the school, but is simply a probationer. If he does not make the required progress he is not admitted as a student, no matter where he comes from. We ought to copy institutions of that kind if we are honest in our statement that we are striving to benefit humanity. Again, if you are going to put out some failures, men who do not seem to have the necessary preliminary requirements at the time, you are going to work a hardship. Where would George Washington be if you expected of the general of the army that he spell correctly twenty words? In the same letter he would spell differently the same word if it occurred twice. Therefore, I say, we must not be too severe and exact too great an education. But at the same time we should insist, first and foremost, that the student have some digital training.

Dr. Patterson.

If the thoughts I had mentioned and the remedies I suggested had been attacked more I would have something to say; but as it is I can add but little to what has already been said. Dr. Hunt spoke about the educational failure, the biggest rascal of them all; and deep down in Dr. Hunt's own mind he knows, and knows full well, that so far as the majority is concerned—and it is the majority and not the individual instance that we must consider—the best dentists, the best men, the best professional gen-

tlemen, are made out of those who have the best preliminary education.

Dr. Guilford said that we must be lenient with the men who suffered from a disadvantage in their early education or culture because sometimes they made admirable men to minister to the relief and add to the comfort of human beings in the practice of dentistry. It was right to be lenient in the days when we did not have enough dental practitioners, but today his argument will not hold good. And this argument is one that has placed the dental profession on the plane that it occupies today and against which the larger portion of my paper argued. Our present status is where we have placed it on account of that leniency; and it is not necessary to do it any longer. When it comes down to a last analysis his argument is a very poor one, and we must select the material, even if sometimes the best educated man makes the biggest rascal, else we will continue to occupy that dead indifferent level which we have occupied so long. We do not want men in our profession who will lower the status of the whole—men "who eat with their knives." We must get away from that and that is all there is about it.

I would like to say a great many things, but it would chiefly be a repetition of what I said in the address; and, in conclusion, I wish to thank you for your kindly reception of what I have said. There is nothing in the paper but what I have become convinced is true from long and close practical observation and experience. Each week as I have gone before my classes for the last twenty years, when I beg and plead for a high plane of professionalism in order that our profession may have a better standard, what do I see? An almost total indifference to the high ideals and professional duties that boys and men ought to be instructed in. They do not care about it. When we get that class of men we must drive that spirit of indifference and apathy out of them or refuse them a dental education.

How Shall Quizzes be Conducted?

Papers by Drs. Bethel, Weisse and Hones.

Discussion.

Dr. F. H. Berry, Milwaukee, Wis.

I am in sympathy with the papers read and can add but little to the subject. I am teaching prosthetic dentistry, and, as you know, it is almost impossible to get good quiz masters, men of the same opinion as ourselves. I have a way of killing three birds with one stone. We all know what a difficult matter it is to call the roll, because students will answer for each other, and when you quiz they consider it a hardship, and they will say that you are partial. I have a quiz for ten or fifteen minutes before each lecture without having previously announced the subject of the quiz. I call on the first man on the roll and ask him to propose a question. I mark him on the merits of his question. Then I ask the last man, for instance, to answer the question. In this way I make the students do all the thinking. In order that you will not pass a question to the chum of the man who asked it, it is well to dilate on the question yourself or to change it somewhat. I do not confine myself to beginning at any particular place on the roll, but am liable to ask any man at any time without any regard to the sequence of the names. I find that this is a very good way of quizzing, because they are propounding their own questions and the answers show where they are deficient; and then you can enlarge on that particular phase of the subject.

Dr. J. B. Willmott, Toronto, Can.

I would like to get a little information from the gentlemen who have had some experience with large classes. How, with a class of about 150, do they manage to make the men speak up so that they can be heard? Often I cannot hear the answer, and I am sure that many in the class fail to hear it, and these men will, therefore, lose all interest in the quiz.

Dr. N. S. Hoff, Ann Arbor, Mich.

Quizzes form a most important part of instruction. Some of the best schools in the country have done away with didactic work altogether. They assign lessons in the text-book and quiz on them. I have very little sympathy with the idea of employing quiz masters, except in the scientific subjects where good quiz masters are available. Every teacher should do his own quizzing, because if he turns his work over to an assistant he is likely to get poor results. Unless the teacher can bring himself into contact with his students he is not doing good teaching,

because he does not get any conception of his students' grasp of the subject.

The difficulties with large classes, mentioned by Dr. Willmott, is one that appeals strongly to me. Sometimes I am unable to quiz more than three or four men in the course of one hour. I do not place any value at all on a parrot-like answer taken from a text-book or from my lecture. Nor do I feel flattered by that kind of an answer. I want the answer to show that the student has been thinking about the subject, showing that he has a mind of his own and that he can use it, if need be. Otherwise the entire system of quizzing is of little or no value. The mere memorizing of a lecture or lesson does not increase the student's understanding of a subject. Students should be encouraged to answer in their terms of speech, voice their own thoughts, even though they be incorrect. This will stimulate them to think while subjected to the embarrassment of their surroundings.

Last year I mentioned my method of quizzing, which I found very successful. I have a blank book made of very thin paper and between the pages is a sheet of carbon paper. I put two questions on the blackboard. Some of the men are asked to answer question number one, and others are asked to answer question number two. They are expected to answer these questions in their own words, and I so formulate the question that they cannot quote from any text-book or lecture. Then, after having answered the questions, they give me the original from their books, retaining the duplicate. I pick out those that are answered carelessly or badly, and as soon as all the sheets are in, I read the question and the answer, but without giving the names of the students, and solicit correct answers from the class. If I do not get a satisfactory answer, I give it myself. I find this method to be a very good one, as it quizzes every student in the class, and gives me a chance to restate a point that may not have been made clear in the lecture.

Dr. F. L. Platt, San Francisco, Cal.

I have established the rule that when a student does not answer so that he can be heard by every one the answer is to be counted a failure. I call attention to the fact that there is a great difference between thinking and wondering, and I never allow my students to do any wondering. My class usually is not a very large one, yet I always have a few bashful or deficient students. I give them every encouragement, and before long they manage to do very well.

Dr. E. H. Long, Buffalo, N. Y.

The last two speakers have touched upon one feature of teaching that has grown in my estimation year after year, and that is, teaching students to think. One of the greatest faults in the training in our tech-

nical and professional schools has been allowing students to give facts without developing in them a corresponding thinking and reasoning power. In anatomy or chemistry there is not much opportunity for the student to reason or think things out, because everything is fact, and each fact must be memorized. But in the practical subjects the teacher should always attempt to train his students to think for themselves; to reason out a question and draw their own conclusions, even though these are at variance with the opinion of the teacher. I always endeavor to present my work in such a way that the student must do some thinking for himself, and not simply answer in a parrot fashion.

I believe that the lecture method is the poorest of all methods of teaching. Of course, it is an easy method of imparting some knowledge, but it is also the poorest because we never know how much the student is learning. In my department—therapeutics—I employ the conference or quiz method as far as possible. I announce that subject to be discussed in advance, then I quiz probably ten men during the hour, giving each time to tell what he knows. I mark them on these answers, giving all to understand that these quiz marks will be taken into consideration in making up their final average at the end of the term. Credit is given as well for reasoning ability as for a knowledge of facts. These conferences are entirely informal and I invite my students to interrupt me with a question at any time.

Dr. Geo. H. L. Wilson, Cleveland, O.

Each man has his own method of quizzing. I have a method that has not been mentioned, hence I feel at liberty to give it to you. I do not feel it is wise to quiz immediately after the first lecture, because we have not yet covered much territory and the student cannot have a very intelligent idea of what he is expected to learn. We should cover a large part of the subject, perhaps one-half of the entire course, and then begin to quiz from the very beginning. Use alternate hours for the quiz and continue until you have covered the subject. The student knows when to expect the quiz, and he knows the work that is to be covered and that it will be taken up in the same manner as the lectures were given. In this way the work is a continuous story and the student can grasp it all, and when it comes to the quizzes he knows that it will be the last time that the subject will be considered before the final examination, and he will give the work his whole attention.

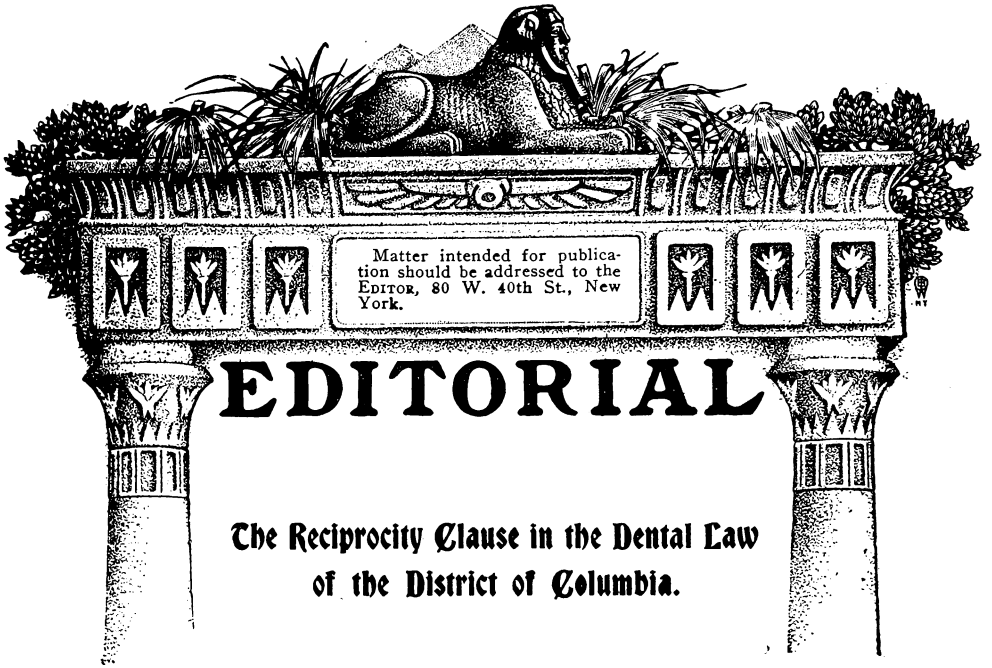
I pursue the method advocated by Dr. Bethel of asking the question first and then calling the name of a student. I notice that most students take down the question, and some are more interested in taking down the question than in answering it. When I see that, I tell them that the quizzes have much to do with the final marking. That if a man is unable

to answer in the quiz a certain per cent will be taken off the final average.

I do not believe in the method of recitations *per se* as being the only method of teaching for the reason that the individual who can make the best statement should make it, and that, I believe, should be the teacher. If not, it is very apparent that the teacher is not the man for the place. As comparatively few students can answer well and promptly, I believe in the lecture system of teaching, to be supplemented by quizzes in which the teacher can draw out the student, and correct his mistakes.

Dr. Starr. (Closing the discussion for Dr. Weisse). This system advocated by Dr. Weisse has been tried for only a short time at our school. Our plan is to bring five or ten men down into the amphitheatre, seat them in front of the examiner, and clear the benches immediately behind them, so that there is no danger of prompting on the part of their fellow students. Each man is quizzed until he fails to answer a question correctly. This method seems to stimulate men to work; it brings forth the spirit of rivalry, and a desire to make a good showing before their fellows. Dr. Weisse said that a student recently answered sixty questions before he failed. It seems to make students more earnest and anxious for the quiz.

The idea of propounding the question first and then calling on the student for the answer is a very good one and worthy of trial. In the New York College of Dentistry under the old method there was little interest taken in the quizzes, and the student, after having been called upon, gave no more attention to what was going on.



Matter intended for publication should be addressed to the EDITOR, 80 W. 40th St., New York.

EDITORIAL

The Reciprocity Clause in the Dental Law of the District of Columbia.

As recently predicted, editorially, Congress has passed and the President has signed an amendment to the dental law of the District of Columbia, which embodies the principle of reciprocity as set forth in the Asheville resolution. The following is the language of the Act:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

"That the Act of Congress entitled 'An Act for the regulation of the practice of dentistry in the District of Columbia, and for the protection of the people from empiricism in relation thereto,' approved June sixth, eighteen hundred and ninety-two, be, and the same is hereby, amended by striking out all of the proviso in section three of said Act and inserting in lieu thereof the following: '*Provided,* That the Board of Dental Examiners may issue a license to practice to any dentist who shall have been in legal practice for a period of five years or more, upon the certificate of the Board of Dental Examiners of the State or Territory in which he practiced, certi-

fying his competency and moral character, and upon the payment of the certification fee, without examination as to his qualifications.' "

Since the passage of this amendment, the Board of Dental Examiners for the District of Columbia has addressed a circular letter to other State Boards, of which the following is a copy:

BOARD OF DENTAL EXAMINERS FOR THE DISTRICT OF COLUMBIA,
Office of the Secretary, Colorado Building.
Washington, D. C.....190

Gentlemen:

Please find appended copy of the Stockton resolution with which we are in hearty accord. We are ready to take up the reciprocal feature with you, but in view of the defect in our law, as just passed, it not being in full accord with said resolution, we request that your Board do not issue certificates to persons unless they *are reputable* in addition to their complying with the *competency, moral character* and *five year clauses.*

STOCKTON RESOLUTION.

"*Resolved,* That an interchange of license to practice dentistry be and is hereby recommended to be granted by the various State Boards on the following conditions:

"Any dentist who has been in legal practice for five years or more, and is a reputable dentist of good moral character, and who is desirous of making a change of residence into another State, may apply to the Examining Board of the State in which he resides for a new certificate, which shall attest to his moral character and professional attainments, and said certificate, if granted, shall be deposited with the Examining Board of the State in which he proposes to reside. And the said Board, in exchange therefor, may grant him a license to practice dentistry."

Very respectfully,

W. E. DIEFFENDERFER, Sec.

Action of Examining Board Peculiar.

It would be expressing it mildly to say that the action of the Board of Examiners of the District of Columbia is peculiar. A board of dental examiners is in effect a part of the police machinery of the State,

and as such it becomes its duty to enforce the laws as they exist. Yet this law is scarcely enacted when this Board publishes broadcast the fact that it contains a "defect." And what is the defect? The Stockton resolution, to which they now attest allegiance, contains in one place the word "reputable," and it is the omission of this word from the act which is claimed to make it defective. Consequently examining boards of other States are requested to make sure that applicants for certificates shall be "reputable" as well as competent, of moral character, and having been in practice for five years. Is not this "splitting hairs?"

What does the Columbia Board understand by the word "reputable?" If a man can obtain from his own State Board a certificate guaranteeing his morality, is it supposable that he would be disreputable? A man might be very reputable and at the same time very immoral, but it is not usual for a moral man to be lacking in reputability. Possibly the Board confounds the word "reputable" with "ethical." If so, they misinterpret the meaning of reputable. Moreover, it would be most inconsistent for them to demand that those asking for reciprocal license should be ethical, when there is no part of their statute which compels a man to practice ethically after obtaining their own regular license. Are all practitioners in Washington conducting themselves ethically?

Another peculiarity in regard to this circular is the avowed hearty accord which it yields to the Stockton resolution, notwithstanding that pending the passage of the act, as we are credibly informed, this Board either officially or as individuals, offered a substitute in language quite different from the Stockton resolution, in that it contained a clause demanding equivalent educational standards. This brings the discussion to a consideration of an editorial on this subject in the March issue of the *Dental Cosmos.*

Educational Qualifications.

In this, after admitting that the reciprocity clause is perhaps all that could be obtained, the writer nevertheless criticises the act because it does not require that the applicant for license shall have obtained a license from some State Board where the educational standards are as high as those in the District of Columbia. By this criticism the editor of the *Cosmos* shows that he has entirely missed the purpose of this bit of legislation.

Reciprocity has been the demand of the dental profession ever since dental statutes made licenses to practice necessary. Bereft of confusing language, the "reciprocity" which the dentists wish is the right to move from one State into another without hindrance from examining boards. It is the righteous demand of the legitimate practitioner wishing to change his place of residence; and the longer such man may have been in practice, the more reasonable his wish to practice elsewhere without passing an examination.

The chief flaws in all efforts to attain reciprocity have been the endeavors first to level educational standards, and, second, to make the reciprocity extend to all practitioners, young or old. But the standards are so varied that Dr. Kirk himself, in his paper read before the New Jersey State Society last summer, suggested a plan which had long previously been advocated editorially in ITEMS OF INTEREST, viz.: a separation of the States into groups, in accordance with their educational standards, and an interchange of license between the States of each group. There is no doubt that this is a good plan, but at the outset it admits the impossibility of making the reciprocity general.

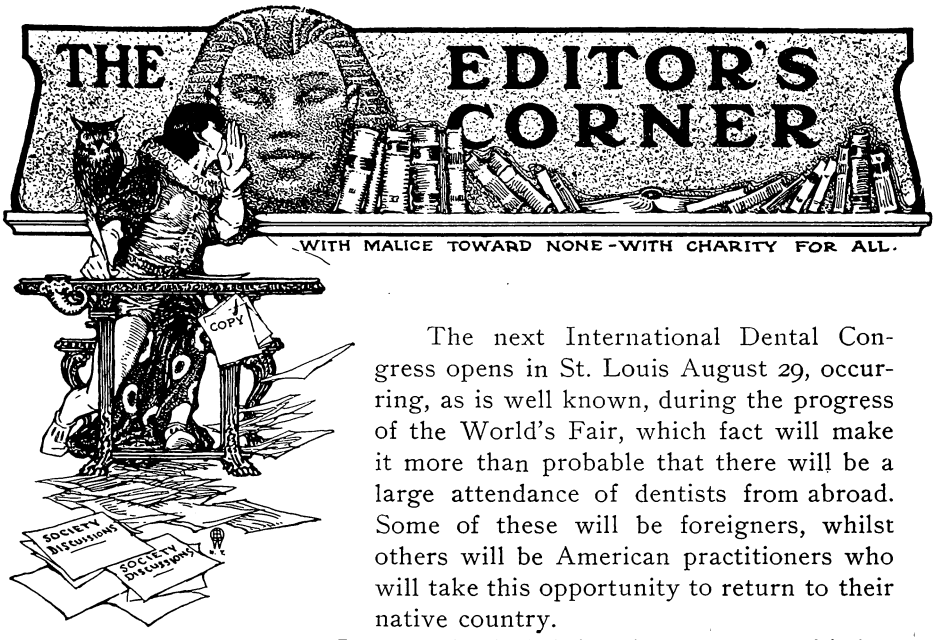
Another feature of reciprocity not to be overlooked is that in any plan which is not erected upon a scheme of equivalent standards, the college interest becomes a potent factor, and justly so. For example, should New York State agree upon an interchange of license with a State having a low educational requirement, it is manifest that students who could not matriculate in a New York college could attend a dental college in the other State, obtain his license there, and then cross into New York and demand a reciprocal license.

The Stockton resolution aimed to furnish a plan which would not conflict with any college interests, and yet which would allow a dentist to change his place of residence. This is accomplished by introducing the five years of practice requirement. It is manifest that no young man desiring to practice in New York would be attracted to a school of lesser preliminary requirements in another State, if he would be obliged to practice in that State for five years before he could obtain the reciprocal license. The college interests being thus amply safeguarded, it is readily apparent that it would be folly to inject an educational standard into the require-

ments of the act, because it would immediately defeat its chief purpose by circumscribing the possible zone of its adoption. As the law stands, and without alteration of a single word, it could be safely passed by every State Legislature without injury to a single interest and with benefit solely to those legitimately entitled to the relief here offered. If a man after practicing legally in one State for five years can obtain a certificate from his State Board that he is both competent and moral, he may with safety be permitted to practice in any other State.

The Beginning of Reciprocity.

In order that States might adopt the principle set forth in the Asheville resolution, it is necessary either that the existing statutes should be such that the Board should have the authority without further appeal to the legislature or else that a special amendment should be made, though the latter course as has been seen has been followed in the District of Columbia. Three States, New Jersey, Michigan and Indiana, have adopted the resolution under the existing laws, thus reciprocity in accordance with the Asheville resolution now exists in the District of Columbia, New Jersey, Michigan and Indiana. It is to be hoped that many other States will quickly follow the good example.



The next International Dental Congress opens in St. Louis August 29, occurring, as is well known, during the progress of the World's Fair, which fact will make it more than probable that there will be a large attendance of dentists from abroad. Some of these will be foreigners, whilst others will be American practitioners who will take this opportunity to return to their native country.

The Duty of Dentists to Join the Congress.

It cannot be denied that there was some friction in connection with the choosing of the committee which should conduct the congress. Two factions were at variance: and these containing representative men on both sides, it was but natural that considerable feeling should have been aroused among the sympathizers of one or the other. But all this is ancient history at the present time. There is but one dominant fact which should possess the mind of the American dentist today. The professional world has been invited to our shores. The Americans are the hosts. If proper hospitality is not extended to our visitors, no amount of argument afterwards will explain this away. It behooves all, therefore, to lay aside factional differences and as promptly as possible to subscribe to the congress by joining as a member. Elsewhere in this number will be found a full list of the committees from all States, and it is to be hoped that this appeal will not go unheeded, and that within thirty days a large membership will have been enrolled.

Dr. Goslee's Articles Continued.

The success of Dr. Goslee's articles on crown work and the large demand which has been exhibited for the same in book form under the title of "Principles and Practice of Crowning Teeth," induces us to believe that our readers will be more than pleased to note in the present

issue that Dr. Goslee has resumed his work and will now continue monthly to take up the methods of making bridge work. It is certain that this series of articles will be written in the same masterly style and with the same attention to practical details which made the first series so popular and so useful; and the publishers promise to illustrate them as fully and as finely as were those relating to crown work.

Obtunding Sensitive Dentine.

The following is a suggestion by Dr. Edwin M. Soule, of Unity, Maine:

"In the literature on the subject of sodium dioxide, I have never seen the obtunding effect of the drug on sensitive dentine spoke of. Possibly this is an oversight on my part, but in case no report of such use has been made, I feel it a duty to mention the matter to the profession. I have found it to work in a very satisfactory manner in all cavities of extreme and abnormal sensitiveness. Also have found it useful in removing remnants of pulps still sensitive after the use of arsenic.

"The application is made by moistening the cavity freely and placing a bit of solid $Na_2 O_2$ therein, or the sodium may be placed in the cavity and a drop of water allowed to fall upon it. A brief period of pain follows, after which the cavity may be dried if convenient and the excavation proceeded with almost painlessly. For deeper work a second application may be necessary. The second application is not followed by as much pain as the first; generally by none at all. The work should be done whenever possible under the protection of the rubber dam and the cavity well washed before inserting the filling.

"The use of this remedy is in accordance with rational therapeutics. The free oxygen acts on the ends of the fibrillæ and Na OH, resulting from the reaction neutralizes any free acid which may be present. I have found this drug more effective than any of the usual preparation from zinc chloride to adrenalin with pressure and would recommend a trial."

Success With Pulp Mummification.

Dr. A. H. Stevens, of Clinton, Conn., sends the following communication in regard to pulp mummification:

"Regarding pulp mummification my experience has been the same as that of Dr. Rippier. (See ITEMS for March.) Of eighty-one teeth treated in a little over four years only five have given trouble later, which I think it is safe to surmise is as large a per cent of success as is obtained in any other method of treatment of exposed pulps. I find that the larger the exposure the better and quicker the result, though I use this method when the pulp is partially dead by cleaning out the canal to the live portion; apply the paste and fill. In the case of using amalgam, when all is ready, I apply the pellet of paste and press

the amalgam firmly in place and finish the filling. This causes pain for a few moments only, which gradually dies away, as in the case of filling a sensitive tooth with oxychloride, and that is the last I expect to hear of it. With gold I cover the paste with oxyphosphate in order to hold the paste in place, but as the cement stiffens I apply pressure the same as in filling with amalgam, and after a few years of tests have better success when pressure is applied. I fully agree with Dr. Rippier, and exposed pulps are no more a source of anxiety to me."

Alcohol in Porcelain Work.

Dr. J. L. Helmer, of Kokomo, Ind., makes the following recommendation in connection to porcelain:

"The best liquid to use for moistening porcelain bodies is pure alcohol or half alcohol and half water. Preference to pure alcohol. The reason for this is its rapid evaporation and that it does not form steam as in case of water alone. In fact, the alcohol can be burned out of the body by holding it close to a flame without dislodging the porcelain body. I have found in my work in porcelain that I obtained denser pieces of porcelain by using alcohol than by use of water, and in case of alcohol fewer bubbles, consequently correct shade corresponding to shade guide. Where there are bubbles in the porcelain, the shade is thrown off more or less."

Repairing Broken Crowns.

Dr. John Girdwood, of Edinburgh, Scotland, writes as follows:

"In your last issue I note an illustrated article entitled 'Repairing of Broken Crowns Without Removing the Pins.' by Dr. J. E. Taft. In the opening paragraph he says: 'Having had occasion to replace a broken pivot tooth or Logan, an idea came to me, or I recalled seeing a description in some magazine, of a method to replace the crown without taking out the pin.' I doubt not when he says 'or I recalled, etc.,' that he refers to a paper written by me entitled 'Pot-Pourri of Practical Hints No. 2,' which was published in the *Cosmos* for September, 1901. The difference between the two methods is that in my case I solder the tube to a cap and band as in the ordinary Richmond crown, whereas Dr. Taft evidently does not band his root. Other minor points in which my method differs from Dr. Taft are, I always use a trephine, of which I have a variety of sizes, as I consider there is great danger in using a round bur in cutting partly, if not altogether, through the post; I also use different sizes of tubes.

SOCIETY ANNOUNCEMENTS

National Society Meetings.

National Association of Dental Examiners, St. Louis, Aug. 25, 26, 27.

Fourth International Dental Congress, August 29 to Sept. 3, 1904.

State Society Meetings.

Alabama Dental Association, Anniston, May 9.
California State Dental Society, San Francisco, May 16, 17, 18.
Connecticut State Dental Association, Hartford, April 19, 20.
Delaware State Dental Society, April 6.
Florida State Dental Society, Atlantic Beach, May 25.
Georgia State Dental Society, Athens, June 28.
Illinois State Dental Society, Peoria, May 10, 11, 12.
Indiana State Dental Association, Indianapolis, June 14, 15, 16.
Iowa State Dental Society, Des Moines, May 3, 4, 5.
Kansas State Dental Association, Topeka, May 12, 13, 14.
Kentucky State Dental Association, Louisville, May 17, 18, 19.
Maine Dental Society, Bangor, July 19, 20, 21.
Massachusetts Dental Society, Boston, June 1, 2.
Minnesota State Dental Association, St. Paul, June 16, 17, 18.
Mississippi Dental Association, Jackson, April 19, 20, 21.
Montana State Dental Society, Butte, Feb. 20-21, 1905.
New Hampshire Dental Society, Concord, May 10-11.
New Jersey State Dental Society, Asbury Park, July 21, 22, 23.
New York State Dental Society, Albany, May 13, 14.

ITEMS OF INTEREST

North Carolina Dental Society, Morehead City, June 22-25.
Texas State Dental Association, Corsicana, May 5, 6, 7.
Tennessee State Dental Association, Jackson, May 26, 27, 28.
Utah Dental Association, Salt Lake City, April 8, 9.
Washington State Dental Society, Seattle, May 26, 27, 28.
Wisconsin State Dental Society, Manitou, July 19-21.

Fourth International Dental Congress.

Committee on State and Local Organizations.

J. A. LIBBEY, *Chairman,* 524 *Penn Avenue, Pittsburg, Pa.*

The Committee on State and Local Organizations is a committee appointed by the Committee of Organization of the Fourth International Congress with the object of promoting the interests of the Congress in the several States of the Union. Each member of the committee is charged with the duty of receiving applications for membership in the Congress under the rules governing membership as prescribed by the Committee on Membership and approved by the Committee of Organization. These rules provide that *membership in the Congress shall be open to all reputable legally qualified practitioners of dentistry.* Membership in a State or local society is not a necessary qualification for membership in the Congress.

Each State chairman, as named below, is furnished with official application blanks and is authorized to accept the membership fee of ten dollars from all eligible applicants within his State. The State chairman will at once forward the fee and official application with his indorsement to the chairman of the Finance Committee, who will issue the official certificate conferring membership in the Congress. No application from any of the States will be accepted by the chairman of the Finance Committee unless approved by the State chairman, whose indorsement is a certification of eligibility under the membership rules.

A certificate of membership in the Congress will entitle the holder thereof to all the rights and privileges of the Congress, the right of debate, and of voting on all questions which the Congress will be called upon to decide. It will also entitle the member to one copy of the official transactions when published and to participation in all the events for social entertainment which will be officially provided at the time of the Congress.

The attention of all reputable legally qualified practitioners of dentistry is called to the foregoing plan authorized by the Committee of Organization for securing membership in the Congress, and the Committee earnestly appeals to each eligible practitioner in the United States who is interested in the success of this great international meeting to make application at once through his State chairman for a membership certificate. By acting promptly in this matter the purpose of the committee to make the Fourth International Dental Congress the largest and most successful meeting of dentists ever held will be realized, and the Congress will thus be placed upon a sound financial basis.

Let everyone make it his individual business to help at least to the extent of enrolling himself as a member and the success of the undertaking will be quickly assured. Apply at once to your State chairman. The State chairmen already appointed are:

General Chairman—J. A. Libbey, 524 Penn avenue, Pittsburg, Pa.

STATES.

Alabama—H. Clay Hassell, Tuscaloosa.
Arkansas—W. H. Buckley, 510½ Main street, Little Rock.
California—H. P. Carlton, Crocker Bldg., San Francisco.
Colorado—H. A. Flynn, 500 California Bldg., Denver.
Connecticut—Henry McManus, 92 Pratt street, Hartford.
Delaware—C. R. Jeffries, New Century Bldg., Wilmington.
District of Columbia—W. N. Cogan, The Sherman, Washington.
Florida—W. G. Mason, Tampa.
Georgia—H. H. Johnson, Macon.
Idaho—J. B. Burns, Payette.
Illinois—J. E. Hinkins, 131 E. Fifty-third street, Chicago.
Indiana—H. C. Kahlo, 115 E. New York street, Indianapolis.
Iowa—W. R. Clack, Clear Lake.
Kansas—G. A. Esterly, Lawrence.
Kentucky—H. B. Tileston, 314 Equitable Bldg., Louisville.
Louisiana—Jules J. Sarrazin, 108 Bourbon street, New Orleans.
Maine—H. A. Kelley, 609 Congress street, Portland.
Maryland—W. G. Foster, 813 Eutaw street, Baltimore.
Massachusetts—G. S. Shattuck, 539 Fourth avenue, Detroit.
Minnesota—C. A. Van Duzee, 51 Germania Bank Bldg., St. Paul.
Mississippi—W. R. Wright, Jackson.
Missouri—J. W. Hull, Altman Bldg., Kansas City.
Nebraska—H. A. Shannon, 1136 "O" street, Lincoln.
New Hampshire—E. C. Blaisdell, Portsmouth.

New Jersey—Alphonso Irwin, 425 Cooper street, Camden.
New York—B. C. Nash, 142 W. Seventy-eighth street, New York City.
North Carolina—C. L. Alexander, Charlotte.
Ohio—Henry Barnes, 1415 New England Bldg., Cleveland.
Oklahoma—T. P. Bringhurst, Shawnee.
Oregon—S. J. Barber, Macleay Bldg., Portland.
Pennsylvania—H. E. Roberts, 1516 Locust street, Philadelphia.
Rhode Island—D. F. Keefe, 315 Butler Exchange, Providence.
South Carolina—J. T. Calvert, Spartanburg.
South Dakota—E. S. O'Neil, Canton.
Tennessee—J. P. Gray, Berry Block, Nashville.
Texas—J. G. Fife, Dallas.
Utah—W. L. Ellerbeck, 21 Hooper Bldg., Salt Lake City.
Vermont—S. D. Hodge, Burlington.
Virginia—F. W. Stiff, 2101 Churchill avenue, Richmond.
Washington—G. W. Stryker, Everett.
West Virginia—H. H. Harrison, 1141 Main street, Wheeling.
Wisconsin—A. D. Gropper, 401 E. Water street, Milwaukee.

For the Committee of Organization,
EDWARD C. KIRK, Secretary.

New York State Dental Society.

PROGRAMME.

The officers and Business Committee present the following programme which is one of unusual merit for the thirty-sixth annual meeting. Subjects will appear in the regular notice: President's address, R. H. Hofheinz, D.D.S.; correspondent's report, Ellison Hillyer, D.D.S.; report of Executive Council, C. S. Butler, D.D.S.; report of Committee on Practice, F. W. Low, D.D.S.; report of Committee on Scientific Research, H. D. Hatch, D.D.S.; essay, E. N. Jenkins, D.D.S., Dresden, Germany; essay, Joseph Head, D.D.S., Philadelphia, Pa.; essay, C. H. Land, D.D.S., Detroit, Mich.; essay, D. D. Smith, D.D.S., Philadelphia, Pa.; essay, Geo. E. Hunt, D.D.S., Indianapolis, Ind.; essay, B. Holly Smith, D.D.S., Baltimore, Md.; essay, W. J. Turner, D.D.S., Brooklyn, N. Y.; essay, C. W. Stainton, M.D.S., D.D.S., Buffalo, N. Y.; essay, I. L. M. Waugh, D.D.S., Buffalo, N. Y.; essay, M. A. Cryer, D.D.S., Philadelphia, Pa.

TO THE DENTAL PROFESSION.

The thirty-sixth annual meeting of our Society will be held in Albany, N. Y., Friday and Saturday, May 13 and 14, convening promptly

at 10 o'clock, on the morning of the first day, in Assembly Hall, at the Hotel Ten-Eyck, where the Committee of Arrangements have made special rates for all attending the convention. The Business Committee have been indefatigable in their effort to make this a most interesting and instructive meeting, as a glance at the list of essayists will testify. A special feature of the meeting will be clinics on "Porcelain Inlays" by Drs. Joseph Head, of Philadelphia, Pa., and C. H. Land, of Detroit, Mich. The president requests you to be present when the gavel falls at the opening session, and extends a cordial invitation to all reputable members of the profession to attend this meeting. Fraternally,

R. H. HOFHEINZ, Pres.

N. A. WHITE, *D.D.S.*, Sec'y, Phelps, N. Y.

Special railroad rates have been arranged with the Trunk Line Association for this meeting. Ask for a certificate, not a receipt, when you purchase your ticket. Without it you cannot have the benefit of the reduced rates on the return trip.

Reports of all officers and committees must be in the hands of the Executive Council by 12 o'clock of the first day, in order to receive consideration.

Exhibitors desiring space will please apply to Dr. J. L. Appleton, 89 Columbia street, Albany, N. Y.

Illinois State Dental Society.

The fortieth annual meeting of the Illinois State Dental Society will be held at Peoria Tuesday, Wednesday and Thursday, May 10, 11 and 12. A splendid programme, including attractive and unusually interesting features, is under course of preparation. The usual fare of one and one-third—certificate plan—will be obtained on all roads in the State and from St. Louis. Remember the date. All reputable practitioners cordially invited.

HART J. GOSLEE, Sec'y.

Northern Indiana Dental Society.

The sixteenth annual meeting of the Northern Indiana Dental Society will be held in Huntington, Indiana, on October 4 and 5, 1904. Arrangements are being made to make this the greatest convention ever held in Northern Indiana. Already some of the best talent in the country has been secured.

OTTO U. KING, Sec'y.

King Building, Huntington, Ind.

Eastern Dental Society of the City of New York.

The twenty-sixth regular monthly meeting of the Eastern Dental Society of the City of New York was held Thursday, March 3, at their new quarters, Clinton Hall, with a large attendance. Dr. Ellison Hillyer, assistant professor to the chair of oral prosthesis at the New York College of Dentistry, delivered a very interesting and instructive talk on "Some Points in Crown and Bridge Work." The speaker was accompanied by Dr. Gould, demonstrator at the same College, and both were warmly greeted by the members of the Society. After the talk a free discussion followed during which some important points were brought forth. Dr. Hillyer received the hearty thanks of the Society for his readiness in accepting the invitation and he cheerfully volunteered his services for the future. The meeting was followed by a collation in honor of the visitors. The next regular meeting will be held Thursday, April 7, at Clinton Hall, 151-153 Clinton street.

J. SOOKNE, Sec'y.
202 E. Broadway, New York.

California State Dental Association.

At the close of the session of 1903, it was the general sentiment that a change from the usual meeting time in June had become desirable. This was largely due to the fact that for several years past the Alumni Association of the Dental Department of the University of California has conducted an annual clinic during commencement week in the month of May. The meeting of the State Association, but a month later, produced an unintended clash of interests. Further than that, the holding of a prolonged session near the beginning of the summer vacation made it difficult for our members to catch up with the time lost through faithful attendance. The design was to select either August or September for the coming meeting, the weather during those months being such as to make a visit to San Francisco enjoyable for members from the warmer interior points, while appointments with patients could be postponed for a few days without loss.

However, the International Dental Congress will be held in St. Louis from August 29 to September 3, and the uncertainty as to the number who might attend from California made it seem prudent to avoid dating our meeting for a corresponding time. The Board of Trustees, therefore, has arranged with the Alumni Association of the Dental Department of the University of California for a Union Clinic to be held in San Francisco, May 16 to 19 inclusive. Cordial co-operation has been assured by

the latter organization, and it seems reasonable that much permanent good should result from this temporary arrangement.

The clinics will be conducted by a joint committee of the two associations. An adjournment may possibly be had for a part of Wednesday, May 18, that those who so desire may attend the commencement exercises in the new Greek Amphitheatre at Berkeley.

The discussion of clinics, reading of essays and reports, election of members, etc., of the regular sessions of the State Association will take place during the evenings of Monday, Tuesday and Wednesday. While all materials, operations and studies pertaining to dentistry will have interest for us at this meeting, a few good papers well discussed and many clinics rationally grouped will be aimed at. There will be a day or more devoted to the various procedures in porcelain dental art; the manipulation of high and low fusing bodies, the making of matrices or impressions of cavities, the insertion of inlays and crowns and a display of furnaces. There are not a few clever porcelain workers in our midst, while many others have not as yet much acquaintance with the newer processes and materials. The joint committee is in correspondence with an acknowledged expert in the making of porcelain inlays, crowns and bridges with a view to having *courses of instruction* carried on during the clinic open to all in attendance. Manufacturers of furnaces and of porcelain bodies have been invited to send representatives to make demonstrations with the same.

There has been evidenced during the past few years a rapidly increasing interest in orthodontia. Knowledge of the elements of normal occlusion is becoming more definite, light is being shed upon the causation of malocclusions and new methods of correction are being devised. No method or device, perhaps, has met with a warmer welcome or has seemed to produce more brilliant results (as in the treatment of the deformity from superior protrusion, for instance) than the Baker reciprocal anchorage system devised by Dr. Henry A. Baker, of Boston. The committee will endeavor to secure the attendance of Dr. Baker or some other orthodontist to give demonstrations of cases and methods. Of special interest to the dentist, the orthodontist and the oral surgeon are the nasal passages and accessory sinuses. A medical specialist has been invited to present the subject of diseases and obstructions of this portion of the respiratory tract. With the aid of lantern slides, a graphic picture of the relationship of these parts to the oral cavity may be obtained.

A general gathering of the dentists of the coast has not been held for many years. The two organizations in themselves will assure a large meeting, and they heartily desire that the profession at large shall join in and contribute to its success. The published transactions will be furnished to each one who attends. The large anticipated attendance has

justified the joint committee in requesting manufacturers and agents of the materials, instruments and furniture used by dentists to place before us a substantial display of their goods. Such an exhibition will furnish one of the most interesting features of the gathering and receive the attention it merits.

The pleasure and duty of being present, either to perform some active service or to help make up an appreciative audience is courteously urged upon each member. Kindly encourage non-members to attend, whether they desire to become members or not. In conclusion, permit me to suggest the desirability of marking off May 16 to 19 inclusive on the new appointment book, now. In the past many who entertain a generous regard for their profession have regretted not doing so. Dentistry, we all agree, is worthy of the time and effort needed for the coming meeting. Let us donate both. L. VAN ORDEN, President.

San Francisco, Cal.

Ontario Dental Society.

The following officers were elected at the meeting of the Ontario Dental Society held in Toronto Feb. 9 to 11, 1904: Honorary president, R. E. Parks, Kingston; president, A. W. Thornton, Chatham; vice-president, J. R. Mitchell, Perth; secretary, Guy G. Hume, Toronto; treasurer, R. Gordon McLean, Toronto; archivist, W. E. Willmott, Toronto; programme committee: A. E. Webster, G. Martin, W. C. Trotter, R. G. McLaughlin, W. Secomb, all of Toronto; district representatives: No. 1, A. A. Smith, Cornwall; No. 2, W. Adams, Whitby; No. 3, A. W. Spaulding, Toronto; No. 4, F. Hansel, Hamilton; No. 5, P. P. Ballachey, Brantford; No. 6, W. A. Brownlee, Mount Forest; No. 7, A. E. Santo, London.

228 Carlton St., Toronto, Ont. G. G. HUME, Sec'y.

Iowa State Dental Society.

The forty-second annual meeting of the Iowa State Dental Society will be held at Des Moines, Tuesday, Wednesday and Thursday, May 3, 4 and 5. W. R. CLARK, Pres.,

Clear Lake, Ia.

C. W. BRUNER, Sec'y,

Toledo, Ia.

Oklahoma Dental Association.

The fourteenth annual meeting of the Oklahoma Dental Association will be held in Shawnee, Oklahoma, May 10, 11, 12.

Shawnee, Okla. T. P. BRINGHURST, Sec'y.

Washington State Dental Society.

The next annual meeting of the Washington State Dental Society will be held in Seattle, Wash., May 26, 27 and 28. Clinicians from other States will be present and an interesting programme is assured by the Executive Committee. A. W. PHILLIPS, Pres.

G. MCGREGOR, Sec'y.

Mississippi Dental Association.

The Mississippi Dental Association will hold its next annual meeting in the new million dollar Capitol, Jackson, Miss., April 19, 20 and 21. We anticipate a splendid meeting. All ethical dentists are cordially invited. Reduced railroad rates on the certificate plan.

T. B. WRIGHT, Sec'y.

Central Dental Association of Northern New Jersey.

At the annual meeting of the Central Dental Association of Northern New Jersey, held at Newark, February 15, the following officers were elected: President, C. S. Stockton, Newark; Vice-President, T. S. Dunning, Paterson; Secretary, H. P. Marshall, Newark; Treasurer, C. A. Meeker, Newark. Executive committee as follows: R. S. Sanger, E. Orange, Chairman; W. Moore Gould, Newark, Secretary; N. M. Chitterling, Bloomfield; F. L. Manning, Red Bank; F. W. Stevens, Newark.

Alumni Association; Kansas City Dental College.

The Alumni Association of the Kansas City Dental College will hold its annual meeting on Saturday, April 30, at 2 p. m. at the College building. All graduates are invited to be present and participate in a literary and musical programme. A banquet will be held the same evening after the commencement exercises. J. P. ROOT, Pres.

T. E. PURCELL, Sec'y.

Montana State Board of Dental Examiners.

The annual meeting of the Montana State Board of Dental Examiners will be held in Helena June 6, 7 and 8, 1904. Application blanks may be obtained from the secretary. Applicants must furnish all materials for demonstration. D. J. WAIT, Sec'y.

Helena, Mont.

ITEMS OF INTEREST

Montana State Dental Society.

The first annual meeting of the Montana State Dental Society was held in Helena, Montana, February 22 and 23, when the following named officers were elected: Dr. W. H. Barth, president, Great Falls; Dr. J. D. Sutphen, first vice-president, Helena; Dr. Jos. Oettinger, second vice-president, Missoula; Dr. Geo. Longeway, secretary, Great Falls; Dr. W. M. Billings, treasurer, Helena. The second annual meeting will be held in Butte, Feb. 20 and 21, 1905.

Great Falls, Montana. G. E. LONGWAY, Sec'y.

Sixth District Dental Society of the State of New York.

The thirty-sixth annual meeting of the Sixth District Dental Society of the State of New York will be held at the Hotel Bennett, Binghamton, N. Y., on May 5 and 6. F. W. MCCALL, Sec'y.

Binghamton, N. Y.

Alabama Dental Association.

The Alabama Dental Association will hold its next annual meeting in Anniston, Ala., beginning on the second Tuesday in May.

Birmingham, Ala. DR. L. A. CRUMLY, Sec'y.

Southern Wisconsin Dental Association.

The tenth annual meeting of the Southern Wisconsin Dental Association will meet in Beloit, Wis., on June 8 and 9. We anticipate a pleasant as well as a profitable meeting, and a cordial invitation is extended to all. C. W. COLLOVER, Sec'y.

Clinton, Wis.

New Hampshire Dental Society.

The New Hampshire Dental Society will hold its annual meeting at Concord on Tuesday and Wednesday, May 10 and 11. All members of the profession are cordially invited to be present.

Manchester, N. H. F. F. FISHER, Sec'y.

Utah Dental Association.

The tenth annual meeting of the Utah Dental Association will be held in Salt Lake City on April 8, 9, 1904. All members of the profession are cordially invited to attend.

Ogden, Utah. S. W. WHERRY, Secy.

Tennessee State Dental Association.

The Tennessee State Dental Association will hold its thirty-seventh annual meeting at Jackson May 26, 27, 28. All ethical practitioners of the dental profession are cordially invited to attend.

R. BOYD BOGLE, President,
Nashville, Tenn.

J. T. CREWS, Sec'y,
Jackson, Tenn.

Delaware State Dental Society.

A regular meeting of the Delaware State Dental Society will be held on April 6. Time and place to be determined by Executive Committee.

Wilmington, Del. R. H. JONES, Secy.

Connecticut State Dental Association.

The fortieth annual meeting of the Connecticut State Dental Association will be held at Hartford, Tuesday and Wednesday, April 19 and 20, 1904.

Bridgeport, Conn. F. HINDSLEY, Secy.

Mississippi Dental Association.

The eleventh annual meeting of the Mississippi Dental Association will be held at Jackson, Miss., April 19, 20 and 21, 1904. The programme will be a very profitable one. Visitors are cordially invited.

Hattiesburg, Miss. T. B. WRIGHT, Secy.

Kentucky State Dental Association.

The coming annual meeting of the Kentucky State Dental Association promises a dental convention of unusual interest to be held in Louisville, May 17, 18 and 19.

Members of the profession are extended a hearty welcome.

Masonic Building, Louisville, Ky. W. M. RANDALL, Sec'y.

Texas State Dental Association.

The Texas State Dental Association will hold its twenty-fourth annual session at Corsicana, Texas, May 5, 6 and 7. All ethical members of the profession are invited to meet with us.

Dallas, Texas. BUSH JONES, Secy.

ITEMS OF INTEREST

Texas State Board of Dental Examiners.

The Texas State Board of Dental Examiners will hold its next examination in Corsicana, Texas, beginning May 9 at 10 a. m. Applicants will be examined theoretically and practically and must come prepared to do operative work, furnishing their own materials, instruments and patients. For further information address,

Hillsboro, Texas. Dr. C. C. WEAVER, Secy.

Minnesota State Board of Dental Examiners.

The Minnesota State Board of Dental Examiners meet for the purpose of examining applicants for license April 5, 6 and 7, 1904. No application received after 12 m. April 5.

Meeting held at dental department of State University at Minneapolis.

Wabasha, Minn. C. H. ROBINSON, Secy.

Class of '95, N. Y. C. D.

The regular annual reunion of the Class of '95 of the New York College of Dentistry will be held Saturday evening, April 16. Members of classes of '94 and '95 are cordially invited to participate. Full particulars will be sent to all members of these classes, sending their addresses to Dr. F. C. Brush, Chairman, 1183 Broadway, New York.

California Board of Dental Examiners.

The Board of Dental Examiners of California will hold its next examination in San Francisco, commencing on May 23, 1904, and will also hold an examination in Los Angeles, commencing on June 13, 1904.

San Francisco, Cal. F. C. BAIRD, Sec'y.

Nebraska State Board of Dental Examiners.

The next meeting of the Nebraska State Board of Dental Examiners for the examination of applicants will be held in Omaha, April 27, 28, 29. Applications and necessary information furnished by the secretary.

405 Paxton Block, Omaha, Neb. W. N. DORWARD, Sec'y.

Maryland State Board of Dental Examiners.

The Maryland State Board of Dental Examiners will meet for examination of candidates for certificates on May 4 and 5, 1904, at the Baltimore College of Dental Surgery at 9 a. m. Candidates must pass a written examination in anatomy, physiology, pathology, therapeutics and materia medica, operative and mechanical dentistry, chemistry and bacteriology and oral surgery, and must insert a gold filling in the mouth and exhibit specimen of prosthetic work, properly vouched for. Application blanks properly filled, accompanied by the fee of $10, must be filed with the secretary prior to May 4. F. F. DREW, D.D.S., Sec'y.

Baltimore, Md.

Kansas State Dental Association.

The Kansas State Dental Association will hold its thirty-third annual meeting in Topeka on May 12, 13 and 14.

Lawrence, Kansas. G. A. ESTERLY, Sec'y.

Michigan State Board of Dental Examiners.

The Michigan State Board of Dental Examiners will meet in Grand Rapids, Mich., on the 10th of May, 1904.

Illinois State Board of Dental Examiners.

The next regular meeting of the Illinois State Board of Dental Examiners to examine applicants for license to practice dentistry in this State will be held in Chicago May 6 and 7, 1904.

Under an opinion of the Attorney-General, the following are eligible to take the examination before the Board: "Any one holding a medical diploma from a reputable medical college; any one who has been a legal practitioner of dentistry for ten years prior to moving into the State, and any one who failed to register in this State at the time the law went into effect, which was in 1881."

Candidates must furnish their own patients and come provided with the necessary instruments, rubber dam and gold to perform practical operations and such other work as is deemed advisable by the Board. Those desiring to take the examination should matriculate with the secretary at least ten days before the date of meeting. The examination fee is $10. Any further information can be obtained by addressing the secretary.

J. G. REID, Secretary,
1204 Trude Bldg., 67 Wabash Ave., Chicago.

State Board of Registration and Examination in Dentistry.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination in the theoretical branches in the assembly room of the State House at Trenton, N. J., on July 5, 6 and 7. Sessions begin promptly at 9 a. m.

The practical prosthetic and practical operative work will be done in Newark. All applications must be in the hands of the secretary ten days prior to the examination. For further information apply to the secretary.

CHARLES A. MEEKER, D.D.S.,
Fulton Street, Newark, N. J.

Arkansas Board of Dental Examiners.

The next meeting of the Arkansas State Board of Dental Examiners will be held May 10, 11 and 12, 1904, in Little Rock, Ark., for the examination of all applicants.

Those having applied for examination will report to the secretary Tuesday morning, May 10, 1904, with rubber dam, gold, plastic filling material and instruments, to demonstrate their skill in operative dentistry. Any one who wishes may bring his patient; so far as possible patients will be furnished. The Board will select the cavity to be filled. The examination will cover all branches of the dental profession. No temporary certificates are issued at any time. Examination fee, $5. For further information write to the secretary.

A. T. MCMILLIN, Sec'y and Treas.

Oklahoma Board of Dental Examiners.

There will be a meeting of the Oklahoma Board of Dental Examiners held at Shawnee, Oklahoma, on Monday and Tuesday, May 9-10, 1904, for the purpose of examining candidates for license and such other business as may properly come before it. For particulars regarding registration apply to the secretary. A. C. HIXON, Secretary.

Guthrie, Oklahoma.